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AMPUTATIONS

The April Number of the *Surgical Clinics of North America* is from New York. It brings to subscribers a *21-Clinic Symposium on Amputations* that is both practical and thorough in its consideration of the various aspects of this important subject.

There are clinics on the General Consideration of Amputations, Conservative Treatment vs. Immediate Amputation in Severe Crushing Injuries of Hand and Forearm, Traumatic Amputations of the Fingers, Bacteriology of Amputations, Anesthesia Preference for Amputation of Extremities, Amputation of Leg for Arteriosclerotic Gangrene, Amputations for Gangrene in Diabetes, Amputations following Trauma and Infection, Care of Diabetic Extremity Lesions, Medical Treatment of Diabetes Before and After Amputation, Amputations for Tumors of Bone, Amputations in Thrombo-Angiitis Obliterans, Arterial Embolism and Thrombosis of Extremities, Amputation for Aneurysms, Optimum Amputation Site in Lower Extremity Amputation, Amputations During Childhood, After-care of Amputation Stump, Kineplastic Surgery for Amputated Arms, and Physical Therapy in Treatment of Amputation Stumps.

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No wonder, therefore, subscribers pronounce these "Clinics" the most helpful books to be had on Today's Surgical Methods.

See Details in SAUNDERS ADVERTISEMENT—Page 3

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EPIDEMIC DIARRHEA OF THE NEWBORN

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NEW YORK

In July 1934 the attention of the department of health was called to some sort of epidemic among the newborn babies in one of the New York City hospitals. This information was given by the father of one of the babies who had died and was to the effect that many of the babies at the hospital were ill and many dying. We investigated this complaint and to our dismay found an epidemic of enteritis of a devastating nature in progress among the newborn babies. Before it had ended, seventy-two, or 18 per cent of the babies in the nursery, had been involved, of whom thirty-two died, a mortality of 45 per cent. Postmortem, pathologic and bacteriologic examinations gave no clue as to what we were dealing with.

Since the discovery of this outbreak of diarrhea among the newborn, although we have become quite familiar with the clinical syndrome, its etiology and its mode of transmission still remain in the realm of speculation. Was it possible that this condition was occurring in other institutions from time to time without recognition? Was it possible that similar outbreaks had occurred in other parts of the country? There was, indeed, a paucity of reports in the literature. In fact, even up to the present there have been, so far as we are able to ascertain, only about eight references to a condition similar to this one. In an effort to answer this question, the Sanitary Code of the City of New York was amended, making diarrhea of the newborn in lying-in institutions reportable; and death certificates from institutions were checked daily. Whenever there seemed to be a disproportion in the number of deaths of infants under 4 weeks of age to that which might be normally expected, we made inquiry, irrespective of what was given on the certificate as the cause of death. Investigations, as a result of these procedures, have uncovered a trail which has led us a long way and, while much remains to be revealed, we believe that we are dealing with an acute communicable disease of the newborn.

From July 1934 to the end of December 1937, we have studied twenty-seven outbreaks, comprising nineteen different hospitals. Fourteen hospitals experienced only one outbreak, three hospitals had two, one hospital three and one hospital as many as four outbreaks during this period. The time interval in the hospitals with multiple outbreaks would not indicate any relationship between the first and subsequent ones. From July 1934 to December 1934 there was one outbreak with seventy-two cases and thirty-two deaths, during 1935 seven outbreaks with 205 cases and ninety-six deaths, during 1936 ten outbreaks with 245 cases and 121 deaths, during 1937 nine outbreaks with 228 cases and 107 deaths. There were nine outbreaks which had their beginning in the winter months (December 21 to March 21), four outbreaks in the spring months (March 22 to June 21), nine outbreaks in the summer months (June 22 to September 21) and five outbreaks in the fall months (September 22 to December 21). This distribution would not indicate a seasonal or climatic predilection. In these twenty-seven outbreaks we have followed the postnatal course of 5,082 live born babies. Of this total, 750 developed the disorder, a morbidity rate of 14.7 per cent. Of the 750 babies attacked, 356 died, making a mortality rate of 7 per cent and case fatality rate of 47.5 per cent.

Read before the Baltimore Medical Society, Feb. 4, 1938.

SYMPTOMATOLOGY

The infant appears to be healthy and thriving. Suddenly it is noted that the child is unusually drowsy and if awakened gives a short, feeble cry. The temperature may be slightly elevated, from 99 to 100 F. Coincidentally or within a few hours, loose, watery, yellowish stools develop, less frequently yellowish brown or greenish, with however no mucus, blood or pus. Occasionally vomiting is present. Distention is also a frequent symptom. Watery stools of increasing frequency occur and weight loss amounting to as much as a pound within twenty-four hours may be noted. The general appearance of the baby changes from that of a previously healthy nursling to that of a markedly dehydrated and marantic infant in shock. In severe cases death may occur in a day or two; in the less severe cases the disease may run a course of from five to seven days, finally terminating in death or going on to recovery in about 50 per cent of the cases. A terminal bronchopneumonia has been noted in some of the fatal cases; several have been complicated by an otitis media which developed late in the course of the disease.

In brief, then, there is a symptom complex of a severe intestinal toxemia with acute onset, accompanied by drowsiness, watery yellowish stools, abdominal distention, marked dehydration, rapid loss of weight and shock.

EPIDEMIOLOGY

This disorder seems definitely limited to the newborn period, the susceptible age being up to 4 weeks. Contacts discharged home from the affected nurseries and later becoming ill were returned to the hospital and admitted to the regular pediatric ward. At no time did the condition spread to older children in the ward. In no instances have the adult attendants in the affected

nurseries become infected. Sick infants discharged home as well as babies becoming ill at home after discharge have in no instance communicated the infection to older members of the family. After the first case, the spread in the nursery is rapid, usually involving infants in adjacent bassinets. This fact, and the fact that infants have come down with the disorder in as short a time as one or two days after having been placed in a nursery where cases had developed, would seem to indicate as a rule a very short incubation period. However, there was one instance in which the infant was taken ill twenty days after discharge from the hospital. The majority of the cases developed between two to six days after the presumed exposure. It not infrequently happened that there was a cessation of new cases for several days, even for a week, only to start up afresh. During this remission period new babies were admitted to the nursery, thereby providing further fuel for the perpetuation of the epidemic. The outbreaks were never fully controlled until the maternity service involved was completely closed to new admissions and, in the course of time, the babies discharged and the obstetric and nursery quarters renovated. Sex and race do not appear to be a factor. Since, in many hospitals, supplementary feedings and fluids are given, at least during the first week, all the pathways for the introduction of infection are open alike to the breast fed as well as the artificially fed baby. This, undoubtedly, accounts for the fact that there was no marked difference in the incidence among breast fed and artificially fed babies.

BACTERIOLOGY

Bacteriologic investigation in our laboratory has thus far failed to reveal a common etiologic agent. Stools from cases and bowel contents taken post mortem disclosed a variety of organisms; namely, B. coli, atypical B. coli, Flexner bacillus and enterococcus (streptococcus). To complicate the picture further, in outbreaks outside New York City other organisms have been reported. Jampolis and his associates reported a B. mucosus capsulatus and a nonhemolytic streptococcus from the Michael Reese Hospital, Chicago, in 1930. At Johns Hopkins Hospital, Schwentker, in a personal communication, reported a B. dispar in 1935, and Park and Christie a non-lactose fermenting B. coli in 1936. A monilium was reported by Durand from the Providence Hospital at Seattle in 1935. In routine cultures of nasal and pharyngeal secretions and of stools of sick babies and mothers and adult maternity service personnel, we have failed to isolate a common organism among the sick babies or an organism common to both the adults and the sick infants. Virus studies made at our laboratory and at the Rockefeller Institute have thus far failed to throw any light on the nature of the morbid agent. May it not be an organism or even a variety of organisms nonpathogenic for older individuals but pathogenic when introduced into the intestinal tract of the newborn? This is put merely as a question.

PATHOLOGY

It is surprising that such a severe intestinal toxemia can produce so little pathologic change. While some congestion of the superficial vessels in the bowel, congestion of Peyer's patches and occasional hemorrhagic areas were noted, no constant characteristic pathologic condition, either macroscopic or microscopic, could be established. Otitis media, parenchymatous degeneration of the liver and kidneys, bronchopneumonia and congestion of the dural and meningeal vessels were occasionally found.

COMMENT

To the health officer, these institutional epidemics present a serious problem, since they affect an age group in which the mortality rate has shown the least reduction. The reduction in the infant mortality rate during the past quarter of a century in New York City is about 61 per cent. However, the reduction in deaths under 1 month of age during the same period has been only about 28 per cent. The infant mortality rate for diarrheal conditions from 1 month to 1 year a quarter of a century ago was 31 per thousand live births, whereas last year it was 3.6, a reduction of 90 per cent. The infant mortality rate for diarrheal conditions under 1 month for the same period was 2.5 per thousand live births, whereas last year it was 1.9, a reduction of only 24 per cent. As a matter of fact, in the past ten years an actual increase is shown. It is apparent that, if further progress is to be made in the reduction of infant mortality, measures to control or prevent these epidemics must be instituted. With the uncontrolled expansion of lying-in institutions and the mass collective care of the newborn in nurseries, with the great variety of institutions—municipal, voluntary and private, large and small—and added to this a lack of exact knowledge of the etiology and mode of transmission, the development of control measures becomes a complicated problem.

CONTROL MEASURES

First, as to the control of the outbreak in an institution. We have learned from experience that temporizing in the hope that the disorder will abate is of no value. Measures and procedures customarily employed in communicable diseases, namely, the immediate isolation of suspected cases, the closing of the maternity and newborn services involved until all the infants have been discharged and thorough cleansing and renovation of the nursery, constitute the speediest way to control an outbreak.

Second, and more important, is to prevent the outbreaks from occurring. This necessitates, in many hospitals, a radical change in the physical setup and the technics in the obstetric and newborn services.

The basic principle involved is that everything coming in contact with the baby's mouth or nose should be in a surgically aseptic condition. Therefore the obstetric and nursing technics must be set up to this end. With this in mind and after numerous conferences with leading obstetricians, pediatricians, representatives of the county medical societies, the Academy of Medicine and various hospital medical and nursing groups, regulations governing lying-in institutions and nurseries for the newborn were established.

THE REGULATIONS

Lying-in Institutions and Newborn Nurseries Regulated.—No person, organization or corporation shall conduct, maintain or operate a lying-in institution or a newborn nursery otherwise than in accordance with the regulations of the Board of Health.

Lying-in Institutions and Newborn Nurseries Defined.—The term lying-in institution as used herein shall be deemed to mean any hospital, institution or place, excepting private homes, in which pregnant women are cared for and delivered of babies. The term newborn nurseries as used herein shall be deemed to mean any room, rooms or ward in such hospitals, institutions or places, excepting private homes, in which newborn babies are cared for or treated.

REGULATION 1. *Maternity and Delivery Room Units.*—(*a*) There shall be adequate isolation quarters for ill or infected mothers in all lying-in institutions. A mother shall be deemed infected if (1) she is a carrier or suspected carrier of, or affected with, a communicable or suspected communicable disease or condition, or (2) if she nurses an ill or infected baby, or (3) if she is not delivered in a lying-in institution in which she is afterward cared for. Ill or infected mothers shall be immediately isolated.

(*b*) There shall be provided and maintained a separate labor and delivery room unit with separate equipment for the delivery of normal or clean operative obstetric cases and another such equipped unit for the delivery of ill or infected mothers. If the latter unit with separate equipment is not provided and the delivery of an ill or infected mother is carried on in the unit used for normal or clean operative obstetric cases, the same shall be immediately and thoroughly cleansed, closed for twenty-four hours, and the equipment resterilized.

(*c*) The maternity ward or unit shall be maintained separate and apart from any medical or surgical service not intimately concerned with the delivery or puerperal period.

(*d*) Gynecologic operative procedures shall be prohibited on maternity services, except such as are intimately concerned with the delivery or the puerperal period.

(*e*) Equipment of delivery rooms shall be limited to instruments and supplies necessary for immediate use. All other equipment and supplies shall be kept in outside supply rooms.

(*f*) All labor and delivery room units shall be equipped with proper apparatus and supplies for safeguarding the lives of the newborn infants and the mothers.

REGULATION 2. *Newborn Nurseries.*—(*a*) Every lying-in institution shall maintain in good order at least two separate regular nurseries, one for the care of normal newborn infants and another for the care of premature and immature infants. These nurseries shall be an integral part of the maternity service.

(*b*) Separate isolation quarters shall be maintained at all times for the isolation of ill or infected babies. A baby shall be deemed infected (1) if a carrier or suspected carrier of, or affected with, a communicable or suspected communicable disease or condition, or (2) if delivered of an ill or infected mother, or (3) if delivered outside the lying-in institution. Such ill or infected baby shall be immediately isolated. The isolation quarters shall be in a division of the maternity service separated from the main nurseries.

(*c*) All nurseries, isolation quarters and the halls adjacent thereto shall be adequately and properly lighted, ventilated and heated, protected from noise and odors and kept free from insects and vermin. These rooms and hallways shall at all times be maintained in good repair and in a clean and sanitary condition. Walls and ceilings of these rooms and hallways shall be so constructed as to be easily cleaned and washed.

(*d*) The spacing between adjoining bassinets in all nurseries and isolation quarters shall be maintained at a minimal distance of six inches on all sides. Where a carrier system is used, the bassinets shall also be so arranged that the infant is at least six inches below the upper surface of the carrier. The suspension of bassinets on double tier racks shall be prohibited.

(*e*) Where common dressing, bathing or diapering tables are used, these shall be draped with sterile linens or suitable clean paper sheeting for each baby immediately before use.

(*f*) The weighing scale shall be draped with sterile linens or suitable clean paper sheeting for the weighing of each baby immediately before use.

(*g*) Individual sterilized rectal thermometers shall be provided for each baby.

(*h*) Common or group baby carriers for taking newborn babies for feeding to their mothers shall be prohibited, unless they are provided with bassinets arranged in accordance with paragraph *d* of this regulation.

(*i*) Each and every nursery shall be provided with running hot and cold water. The isolation quarters, if newly constructed or altered after Jan. 1, 1938, shall be provided with running hot and cold water.

(*j*) Each and every nursery and the isolation quarters of such nursery shall be provided with proper receptacles for the temporary disposal of soiled linen, diapers and waste. Such soiled articles shall be removed immediately or within a reasonable time from the nursery or isolation quarters.

(*k*) All bottles used for feeding babies shall be cleaned and sterilized in the nursery quarters before return to the formula room or suite.

(*l*) Anything coming in contact with or introduced within the baby's nose or mouth must be made sterile and handled only by a person who has scrubbed and disinfected his or her hands and put on sterile rubber gloves. All tongue depressors, applicators, ear specula and other examining instruments shall be standard nursery equipment and separate sets shall be maintained for each nursery and for each isolation quarter, and shall be sterilized before use for each baby. The bowls of stethoscopes shall be cleaned with a proper solution of alcohol, cresol or other disinfectant before use for each baby.

(*m*) All gauze, cotton, swabs or other materials intended for use in the care of the baby shall be sterilized and kept or stored in sterile containers.

(*n*) Equipment of the nursery shall be limited only to furnishings and supplies necessary for the immediate care of the infants.

(*o*) Dry dusting or sweeping shall be prohibited in all the nurseries and adjoining hallways.

REGULATION 3. *The Newborn Nursery Laundry.*—All nursery linens, including diapers and articles of infants' clothing, shall be kept separate from linens of other parts of the hospital and when soiled shall be washed and sterilized separately from the linens of other parts of the hospital, in a separate laundry or in the same laundry at definite periods set aside for the laundering of these nursery linens only. Such sterilization shall consist of boiling the linens in water for fifteen minutes and of thorough rinsing in clean water, or of another approved method of sterilization.

REGULATION 4. *Formula Room or Suite.*—(*a*) A formula room or suite shall be maintained in all lying-in institutions, specifically for the purpose, completely separated from any diet kitchen, pantry, scullery, or other place of food storage or preparation.

(*b*) The formula room or suite shall be provided with adequate refrigeration facilities for formulas and milk supplies, and with adequate sterilization facilities for the sterilization of bottles, nipples, bottle caps and other formula preparation utensils.

(*c*) Any nurse or dietitian preparing or assisting in the formula room or suite in the preparation of formulas for babies of the newborn nurseries shall, before beginning such duties, remove her outer garments, put on a sterile cap and mask, scrub hands and put on sterile gloves and a sterile gown. An aseptic technic such as is carried out in operative procedure shall be maintained at all times.

(*d*) All bottles, nipples, bottle caps and other formula preparation utensils shall be adequately sterilized in the formula room or suite before use in preparing or bottling formulas. Nipples may be sterilized in the nurseries immediately before use.

(*e*) Each baby shall have its individual set of properly labeled bottles sufficient for a day's feeding. The storing of formula feedings in bulk is prohibited.

REGULATION 5. *Accessory Rooms.*—In lying-in institutions where ritual circumcision is done, a separate room shall be maintained for this purpose, which room shall be completely divided by a glass partition of at least six feet in height. One side of this room shall be used for the circumcision procedure and the other side for witnesses. All persons concerned with the ritual circumcision shall follow the aseptic technic outlined in regulation 13*a*, and all procedures connected therewith shall conform to this technic.

REGULATION 6. *Sanitary Equipment.*—All nurseries, isolation quarters, formula rooms, examining rooms, labor and delivery rooms, and maternity rooms or wards, shall each have adequate facilities for the scrubbing of hands, suitable disinfectant solu-

tion, and receptacles for the efficient temporary disposal of soiled linens and waste. All plumbing, plumbing fixtures, sterilizers and other similar equipment shall be so constructed, installed and maintained as to prevent cross connections or other sanitary hazards.

REGULATION 7. *The Nursing Staff.*—(*a*) A separate nursing staff under the supervision of a registered graduate nurse shall be maintained, both day and night, in the nurseries and isolation quarters concerned with the care of the newborn. Not more than one unit of eight babies shall be under the care of any one individual nurse at any time during the day or night.

(*b*) Nurses assigned to formula room duty shall be prohibited from doing any type of duty at any time which may bring them in contact with a septic or infected patient in any part of the hospital.

(*c*) Nurses assigned to the nurseries shall wash their hands thoroughly with soap and hot water immediately after changing or diapering each baby. If at any time during the feeding of any baby it becomes necessary to handle or change the nipple of a feeding bottle, the nurse shall scrub her hands thoroughly with soap and hot water and put on sterile rubber gloves, unless the handling or changing of the nipple is carried out by means of sterile forceps in such a way that the hands of the nurse will not come in contact with the nipple.

(*d*) All nurses assigned to the isolation quarters shall be prohibited from entering the regular or the premature nurseries.

(*e*) Private nurses may be admitted to the nurseries of private pavilions, provided they comply with all the prescribed regulations as outlined in regulation 13*a*.

(*f*) No person shall enter the nurseries or the isolation quarters except those immediately concerned with the care of the newborn.

REGULATION 8. *The Medical Staff.*—The medical board or other governing body of such hospital or institution shall designate whether the newborn nurseries are under the supervision of the obstetric or pediatric service. Such designation shall be in writing and kept on file in the office of the superintendent and be available for inspection at any time by a representative of the Department of Health.

REGULATION 9. *Maternity and Newborn Service Case History Records.*—Complete and detailed case history records shall be kept of the progress of all maternity patients and their babies, and be available for inspection at any time by a representative of the Department of Health.

REGULATION 10. *Examination of Maternity and Newborn Service Personnel.*—(*a*) All personnel on duty on the maternity or newborn services, when these regulations go into effect, shall be examined by a physician designated by the hospital management and be certified by him as showing no evidence of communicable disease or a respiratory, urinary or fecal carrier state.

(*b*) All new personnel shall be similarly examined prior to assignment to the maternity or newborn service.

(*c*) All personnel on duty on the maternity or newborn services shall report immediately to a physician designated by the hospital management any indisposition however slight; such individuals and all individuals absent from duty because of any illness whatever shall be excluded from the maternity and newborn services until examined by the physician designated for the purpose and certified by him, in writing, to the superintendent, as not suffering from any condition that may endanger the health of the mothers or babies. All such certifications shall be kept on file in the office of the superintendent and shall at all times be open to inspection by a representative of the Department of Health.

REGULATION 11. *Examination of Maternity Patients.*—All maternity patients shall have a complete history taken, a thorough physical examination, and inquiry made on admission as to any infection. Any history or examination that reveals a communicable or suspected communicable condition or disease, or a respiratory, urinary or fecal carrier state, shall be sufficient cause to have such patients isolated.

REGULATION 12. *The Care of the Newborn Baby.*—The newborn infant shall be examined for hemorrhage, injuries, defects or signs of infection immediately on delivery and be further observed daily. If any infection is found or suspected, the baby shall be isolated immediately. All babies shall be reexamined at the time of discharge.

REGULATION 13. *The Aseptic Nursery, Maternity Ward, Delivery Room and Feeding Technics.*—(*a*) Nursery Technic: All doctors, nurses and other hospital personnel in attendance on babies in any of the newborn nurseries or isolation quarters shall remove coats or other outer clothing, bare their arms to the elbows, wash their hands and arms thoroughly with soap and hot water and put on clean caps, gowns and masks. In addition they shall wash their hands with soap and hot water and immerse them in a suitable disinfectant solution before the handling of each baby. Babies shall be handled as little as possible, and in strict accordance with an aseptic procedure as close to that of an aseptic operative procedure as is possible.

(*b*) Maternity Ward Technic: All doctors, nurses and other hospital personnel before attendance on maternity patients in other than individual private rooms shall remove coats or other outer clothing and put on clean caps, gowns and masks. No visitors shall be permitted beyond the foot of the bed of the patient, nor shall outer clothing be permitted to be placed on the beds of patients.

(*c*) Delivery Room Technic: This shall be in accordance with recognized and approved surgical operative technic.

(*d*) Feeding Technic: At feeding times the mother shall be provided with a clean mask prior to receiving her baby for feeding. The mother's breasts shall be thoroughly cleansed before each nursing.

REGULATION 14. *Visitors and Visiting Hours.*—(*a*) Visiting hours to maternity services shall be set at such a time as not to coincide with the hours when the newborn infants are in the maternity ward or rooms for nursing by their mothers. There shall be a minimum of visiting permitted on all maternity services.

(*b*) Visitors or individuals not connected with the direct care of the babies shall be prohibited from entering the newborn nurseries at any time.

(*c*) Children under 14 years of age shall be prohibited from admittance to any maternity ward at any time.

REGULATION 15. *Copy of Regulations to be Kept Readily Available.*—A copy of these regulations shall be kept on the maternity service of all lying-in institutions for the information and guidance of all personnel connected with such service.

It is probable that, with further experience, these regulations may be amended by adding others or deleting some that may be found unnecessary. However, we believe that these regulations are basically sound and indicate the fundamental principles on which a well regulated maternity service should be conducted to the end that not only epidemic diarrhea of the newborn will be controlled but that neonatal morbidity and mortality from other causes may also be reduced.

The Vegetative Nervous System.—This portion of the nervous system has been termed by various workers sympathetic, autonomic, vegetative or involuntary. Since it is not completely involuntary or autonomic and cannot be separated from somatic functions, we shall use the terms sympathetic or vegetative nervous system. We shall apply to the thoracolumbar portion of the vegetative nerves the name orthosympathetic, while terming the bulbosacral outflow parasympathetic. The nerves belonging to the vegetative nervous system innervate unstriped (smooth) musculature in general, which includes the blood vessel walls, heart, lungs, bladder, glandular structures and the viscera. Generally speaking, the nerves innervate structures which are concerned with internal activities of the body, those necessary to the continuance of life and those which must be adjusted for, or as a result of, external changes. This nervous organization is concerned with the internal matrix (vital functions) within which the processes of life are based. The fine coordination of the various component parts of the vital machine, their modification to meet sudden stresses and their adaptation to environmental factors are, in general, vegetative functions.—Grinker, Roy R.: Neurology, ed. 2, Springfield, Ill., Charles C. Thomas, 1937.

LAËNNEC'S CIRRHOSIS

REPORT OF 217 CASES

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LOS ANGELES
AND
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The clinical impression has long been current that the excessive consumption of alcoholic beverages is conducive to the development of Laënnec's type of cirrhosis of the liver. This impression has persisted in spite of the general failure to reproduce this lesion experimentally by feeding alcohol to laboratory animals. Mallory [1] has suggested that minute amounts of phosphorus alloyed with iron which may be present as contaminating traces in liquors may be the real etiologic factor. Von Gerlach [2] found that the copper content of the liver of patients with cirrhosis was elevated and suggested that this mineral in conjunction with alcohol may be significant. Moon [3] recently reviewed the literature dealing with the experimental attempts to produce cirrhosis artificially and decided that no single factor can be responsible, that several factors must operate simultaneously and that, of these, nicotine, manganese and phenylhydrazine are probably significant. Boles and Clark [4] have also rejected the alcoholic theory, on the basis of their autopsy statistics.

The autopsy records of typical cases of Laënnec's cirrhosis (portal, nodular or atrophic) from the Los Angeles County Hospital have been examined in an effort to gain further insight into the etiology of this interesting lesion. Records on 17,874 autopsies performed from Jan. 1, 1918, to May 1, 1937, are available. In these, 217 cases of Laënnec's cirrhosis were observed. This represents a gross incidence of 1.2 per cent, which is lower than the figures available to us (Mallory [1] 3 per cent, Boles [2] 6 per cent and Ophüls [5] 2.2 per cent). When arranged chronologically, these cases of cirrhosis show a definitely rising incidence (chart 1). The beginning of this rise coincided with the repeal of the national prohibition law. The incidence for the period since repeal is three times that observed before (table 1).

TABLE 1.—*Incidence of Cirrhosis*

Years	Number of Autopsies	Number of Cases of Cirrhosis	Percentage of Cirrhosis
1918-1932 (inclusive)	9,527	62	0.65
1933-1937 (May 15)	8,347	155	1.84
Total	17,874	217	1.21

TABLE 2.—*Sex Incidence*

	Males	Females	Total
1918-1932	41	21	62
1933-1937	114	41	155
	155 (71.4%)	62 (28.6%)	217

As has been observed in other series, the sex incidence of these 217 cases shows a preponderance of males over females (2.5:1; table 2). The ratio of males to females is slightly higher (2.64:1) in the period from 1933 to 1937 than in the earlier one (1.95:1). Most of the cirrhosis has occurred from the fourth to the eighth decade, inclusive (chart 2). Although the peak of incidence for the group as a whole falls in the sixth decade, that of the females occurs a decade earlier than that of the males.

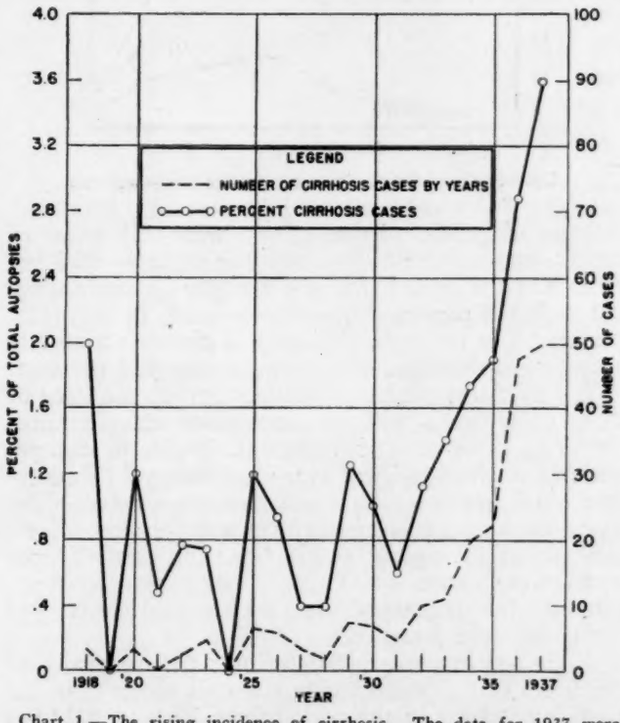

Chart 1.—The rising incidence of cirrhosis. The data for 1937 were estimated for twelve months on the basis of those collected in the first four months.

Since we have been concerned chiefly with the so-called alcoholic type of cirrhosis, cases of hypertrophic, biliary and syphilitic cirrhosis have been excluded from this study. The criteria used in classification have been as follows:

The liver usually appears shrunken, deformed and covered with yellowish brown or orange colored projections. The tissue between the projections is gray and firm. The liver cuts with increased resistance; the cut surface shows distortion of the normal lobular pattern, projections of varying size and scarring.

The principal factor contributing to death in this series was lobular pneumonia or bronchopneumonia, of which 33.6 per cent of the patients died (table 3). It was difficult to determine in many instances whether bronchopneumonia was the actual or only a contributing cause of death. For the purposes of this report a patient dying with bronchopneumonia was assumed to have died of it. Frequently this lesion was hemorrhagic and of the aspiration type.

Next in order of frequency as an immediate cause of death was hemorrhage from the gastro-intestinal tract (20 per cent). Thirty patients (13.9 per cent) had ruptured esophageal varices with fatal hemorrhage.

From the Los Angeles County Hospital, Department of Pathology, and the Departments of Pathology and Internal Medicine of the College of Medical Evangelists.

1. Mallory, F. B.: Cirrhosis of the Liver, in Cyclopedia of Medicine, Philadelphia, F. A. Davis Company, 1935.
2. Gerlach, W.: Alkohol, Kupfer, Leberzirrhose, Schweiz. med. Wchnschr. **65**: 194-197 (March 2) 1935.
3. Moon, V. H.: A Review of All Experimental Attempts to Produce Cirrhosis Artificially, Klin. Wchnschr. **13**: 1489-1493 (Oct. 20) 1934.
4. Boles, R. S., and Clark, J. H.: The Role of Alcohol in Cirrhosis of the Liver, J. A. M. A. **107**: 1200-1203 (Oct. 10) 1936.
5. Ophüls, William: A Statistical Survey of Three Thousand Autopsies, Stanford University, Calif., Stanford University Press, 1926.

One half (fifteen) of these did not have ascites. In this group without ascites a correct clinical diagnosis was made ante mortem only twice. In the fifteen cases of esophageal hemorrhage with ascites a correct diagnosis was made thirteen times.

The presence of ascites was the principal factor in the whole group of cases conducive to a correct ante-

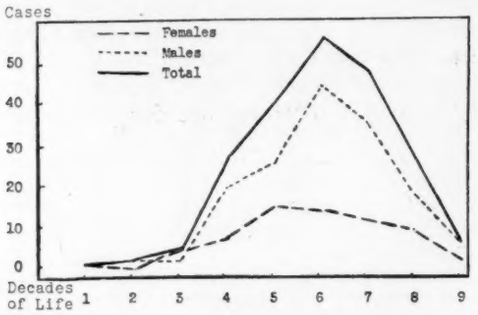

Chart 2.—Incidence of cirrhosis according to age and sex.

mortem diagnosis. In all, there were 131 cases of ascites, and a correct diagnosis was made in 56.5 per cent. On the other hand, in the eighty-six cases without ascites a correct diagnosis was made in only 15.1 per cent. In the total 217 cases of cirrhosis a correct antemortem diagnosis was made in only 41.5 per cent.

The third or next most prominent group consisted of cases of cirrhosis without concomitant complications. Death in these cases was presumably due to changes within the liver itself, or "liver insufficiency." Twenty-five (11.5 per cent) such instances were noted. The livers were as a rule of less than average size. Their average weight equaled 1,364 Gm.; only six (24 per cent) were above 1,500 Gm. Twenty-two (88 per cent) of the patients showed ascites, and eleven (44 per cent) were jaundiced.

A change in the gross pathologic characteristics of the livers of the patients with cirrhosis occurred in the past few years. In the period from 1918 to 1932 the livers ranged in weight from 480 to 2,700 Gm. (One 2 year old child had a liver weighing 110 Gm.) Of the fifty-eight livers in this group whose weight was recorded, seventeen (29.3 per cent) weighed 1,500

TABLE 3.—*Cause of Death in Cases of Cirrhosis*

	Cases
Pneumonia	
Lobular	73
Lobar	8
Gastro-intestinal hemorrhage	43
Liver insufficiency	26
Peritonitis	10
Cardiac failure	9
Malignant process	6
Tuberculosis	6
Cerebral softening	5
Portal thrombosis	5
Mastoiditis	2
Miscellaneous	24
	217

Gm. or more. In the later period, 1933 to 1937, the average weight of the liver tended to be greater. The livers ranged from 675 to 3,800 Gm. Of the 153 livers in this group, eighty-three (54.2 per cent) weighed 1,500 Gm. or more (table 4). The increased size and weight of the livers in the second group was in most instances due to the presence of fatty change.

This increased incidence of fatty change in cirrhotic livers somewhat parallels that of fatty livers seen in this laboratory in patients with chronic alcoholism who died without clinical evidence of Laënnec's cirrhosis. Chart 3 shows the percentage of such livers to the total autopsies for the past four and a half years. These cases represent persons whose condition was diagnosed clinically as chronic addiction to the excessive use of alcohol and in whom no other lesion was found at autopsy to explain the fatty degeneration of the liver.

Sixty-four (29.5 per cent) of the 217 patients with cirrhosis were jaundiced. Of these, seven (10.9 per

TABLE 4.—*Comparative Weights of Livers*

Weight of Liver	Cases in 1918-1932	Cases in 1933-1937
1,500 Gm. or more	17 (29.3%)	83 (54.2%)
Less than 1,500 Gm.	41	70
	58	153

TABLE 5.—*Alcoholic History*

No mention of alcohol	118
Use of alcohol denied	4
Use of alcohol questionable	5
Use of alcohol admitted	46
Clinical records inadequate or not available	44
	217

cent) showed acute hepatic necrosis complicating the atrophic cirrhosis. Contrasted to this, only five (3.2 per cent) of the 153 patients without jaundice showed acute necrosis. Three of the sixty-four patients with jaundice showed malignant changes in the liver parenchyma; in forty-four cases no obvious cause for jaundice was observed.

Since the excessive consumption of alcoholic beverages has been considered to be an important etiologic factor in atrophic cirrhosis, the records of these 217 cases were examined as to this point. In forty-six cases (22.2 per cent) there was a clear-cut history of chronic alcoholism (table 5). This group embraced cases of Korsakoff's syndrome, delirium tremens, peripheral neuritis and repeated admissions for acute intoxication. In a considerable number of cases the moribund condition of the patient on admission precluded the possibility of eliciting an adequate history. In these forty-six cases the history showed marked evidence of chronic alcoholism. In five additional cases the history of the abuse of alcohol was questionable. In all, in forty-six cases (26.5 per cent) of 173 in which an adequate history was available an abuse of alcohol was reported. Were records available on the drinking habits of a greater number of the patients in this series, a higher incidence of excessive alcoholic consumption might be expected.

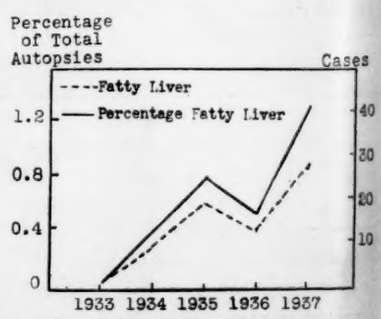

Chart 3.—Number of fatty livers observed in relation to the number of autopsies; data for 1937 estimated on the basis of those collected in the first four months.

Syphilis was the next most frequent associated condition, being present in twenty-six (12 per cent) cases. Tuberculosis was noted in six (2.8 per cent).

COMMENT

Laënnec's (atrophic) cirrhosis is apparently showing a rising incidence. The beginning of this rise coincided with the repeal of the national prohibition law. Since repeal the incidence in our series has been three times that seen during the prohibition period. One fourth of the patients definitely had chronic alcoholism. This factor exceeded all other single known factors in frequency. These facts seem to indicate that the excessive consumption of alcoholic beverages is in some way conducive to cirrhosis of the liver. It probably acts only as a contributing factor. Further study of cirrhotic livers for their mineral content might be profitable.

In his group of sixty-eight cases of true Laënnec's cirrhosis, Ophüls [5] found a history of alcoholism for thirty-one of thirty-four patients about whom clinical data were available. Assuming, as we have done in this study, that the absence of clinical data was equivalent to a negative history, this incidence equals 45.6 per cent. Even Boles and Clark,[4] who reject the alcoholic hypothesis, report an incidence of 35 per cent. These observations, in the light of our data, seem too significant to be passed over lightly. The generally increasing addiction to nicotine and the increasing therapeutic use of heavy metals may act with alcohol as aggravating factors.

No insight was gained from this study into the nature of death from "liver insufficiency." Clinical procedures available at present are not adequate for the correct diagnosis of cirrhosis even in 50 per cent of cases; hence the material available is too limited for adequate statistical analysis. Furthermore, the various liver function tests known at present are notoriously inadequate as a true measure of the functional activtity of this organ.

The prevalence of fatty changes in livers observed during the second period covered by this report (1933-1937) is worthy of note. The fact that the liver is practically always large and fatty in patients dying with clinically recognizable chronic alcoholism but not presenting classic cirrhosis, and the almost complete absence of this type of change in the liver under other conditions lead to the conclusion that there is an essential relationship between chronic alcoholism and fatty liver.

In considering the cases in which the liver shows a combination of typical cirrhosis and fatty metamorphosis two hypotheses present themselves: 1. These combined lesions represent a comparatively early stage of cirrhosis in which the fatty change is being obscured and submerged by the fibrotic replacement hyperplasia. 2. The fatty change is the true lesion of alcoholism, which has been superimposed on an already existant cirrhosis of, at present at least, unknown cause. The correct solution to the problem will have to await direct experimental evidence.

SUMMARY

1. The incidence of Laënnec's type of cirrhosis of the liver is apparently increasing. For the years 1918 to 1932 inclusive this lesion was observed sixty-two times, or in 0.65 per cent of all autopsies. From 1933 to May 15, 1937, it was observed 155 times, or in 1.84 per cent of all autopsies.

2. The excessive consumption of alcoholic beverages seems to be a contributing factor to the development of cirrhosis. In forty-six cases of 173 (26.5 per cent) there was a clear-cut history of alcoholism.

MEDICAL ASPECTS OF SURGICAL TREATMENT OF HYPERTENSION

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The effort to treat hypertension by surgical as well as medical means is a development of recent years. While the theoretical basis of certain operations used is insecure, some of the results obtained are worthy of serious study. Two operations among the many proposed appear most likely to be of some value. These are resection of the anterior spinal nerve roots [1] and resection of the splanchnic nerves.[2]

Three and one-half years ago Dr. George Heuer of the New York Hospital and I decided to study intensively the effects of these two operations on patients with hypertension. A plan was put into effect whereby the patients were studied for a long period in the Rockefeller Hospital and transferred to the New York Hospital for operation by Dr. Heuer. They were then returned for further study. In this manner we believed that the study would be as objective as possible.

In all twenty patients have been subjected to section of the anterior spinal nerve roots and nine patients to resection of the splanchnic nerve and the lower thoracic ganglions (Peet technic). It is not my purpose in this brief communication to discuss the literature or review the cases in detail. This has recently been done by Dr. Heuer and me.[3] It is my purpose to present a summary of my medical observations and experiences and of the opinions which I have formed during the care of these patients. Dr. Heuer has reviewed the subject from the surgical point of view.[4] It appeared to be a matter of the first importance to observe our patients for as long as practical before operation to exclude normal fluctuations in the level of arterial pressure and to become thoroughly acquainted with their physical status and emotional pattern. Most patients were not accepted for study unless the date of onset of the disease could be determined with reasonable accuracy from records of physicians and insurance examinations, for we wished to ascertain the probable rate of progress of the disease. The patients were usually studied in the outpatient department for several weeks or months and then admitted to the hospital for a month or more to rest in bed. They were not, except under special circumstances, allowed out of bed. When it seemed desirable, sedatives, such as bromides, chloral preparations and amytal were administered.

Whether it would be wise to select only certain patients for operation was considered, but as no criteria for such selection were known, patients with various

From the Hospital of the Rockefeller Institute for Medical Research.
Lecture given at Georgetown University School of Medicine, Sept. 13, 1937.

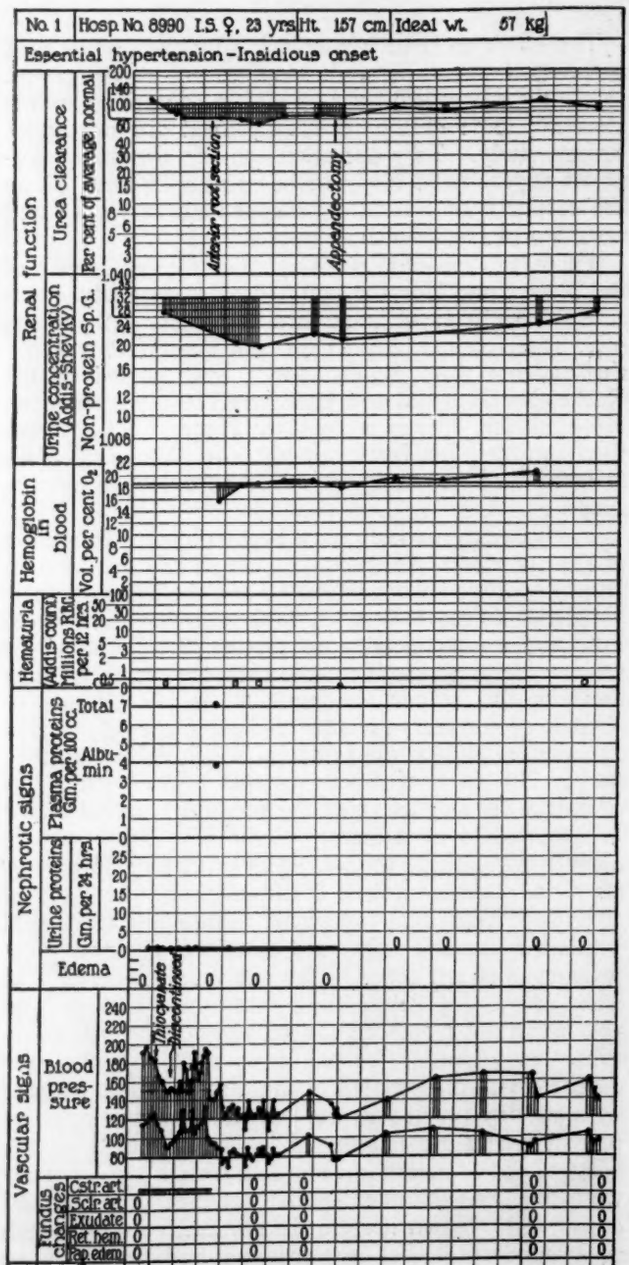
1. Adson, A. W., and Brown, G. E.: Malignant Hypertension, J. A. M. A. **102**: 1115 (April 7) 1934. Adson, A. W.; Craig, W. M., and Brown, G. E.: Surg., Gynec. & Obst. **62**: 314 (Feb. 15) 1936.

2. Craig, W. McK., and Brown, G. E.: Unilateral and Bilateral Resection of the Major and Minor Splanchnic Nerves, Arch. Int. Med. **54**: 577 (Oct.) 1934. Fralick, F. B., and Peet, M. M.: Hypertension Fundus Oculi After Resection of Splanchnic Sympathetic Nerves, Arch. Ophth. **15**: 840 (May) 1936. Freyberg, R. H., and Peet, M. M.: J. Clin. Investigation **16**: 49 (Jan.) 1937. Smithwick, R. H.: The Value of Sympathectomy in the Treatment of Vascular Disease, New England J. Med. **216**: 141 (Jan. 28) 1937. Page, I. H., and Heuer, G. J.: The Effect of Splanchnic Nerve Resection on Patients Suffering from Hypertension, Am. J. M. Sc. **193**: 820 (June) 1937.

3. (*a*) Page, I. H., and Heuer, G. J.: Treatment of Essential and Malignant Hypertension by Section of Anterior Nerve Roots, Arch. Int. Med. **59**: 245 (Feb.) 1937. (*b*) Page and Heuer.[2]

4. Heuer, G. J.: Bull. New York Acad. Med. **13**: 692 (Dec.) 1937.

types of hypertension were chosen. This choice has, I believe, been advantageous, because some of the patients responded well who might least have been expected to do so. In short, the criteria usually



Example of method employed for the study of patients. "Months" represents the estimated time elapsed since the onset of the disease, the vertical lines separating periods of a month. Under "Fundus Changes," *Pap. edem.* indicates papilledema, *Ret. hem.* retinal hemorrhages, *Sclr. art.* arterial sclerosis and *Cstr. art.* arteriolar constriction. Under "Blood Pressure," the dots represent measurements taken daily for from three to five days, averaged for convenience in charting.

employed for the measurement of vascular flexibility have not proved completely reliable. We have had no experience with the method of Allen,[5] in which thiobarbituric acid is administered as an anesthetic to ascertain the fall in pressure as an index of vascular flexibility.

In order to avoid confusion, the classification of the types of hypertension will be briefly reviewed. Essential hypertension is considered a disease with a strong hereditary background. The onset is usually insidious and without ascertainable cause but often follows several years after toxemia of pregnancy or eclampsia. It may occur during the menopause. Vascular and renal changes may be slight or advanced. Morbid cardiac changes may or may not be present. Except for constriction and sclerosis of the retinal arterioles and arteriovenous compression, the ocular fundi are normal. Later in the disease exudates may appear. Secondary glaucoma is not rare. Some patients show more or less well developed neuroses. Some exhibit signs and symptoms such as primitive emotional behavior, blushing, lacrimation, sweating and palpitation, which in many ways appear to imitate morbid stimulation of the diencephalic centers (the "hypertensive diencephalic syndrome"[6]). Death is usually due to cardiac failure, apoplexy or uremia. Great variability is exhibited in the rapidity with which the disease progresses. At any time progress may be accelerated and signs appear suggesting that it has become malignant.

Malignant hypertension, conversely, is considered a syndrome which runs its course in a short time, rarely more than four years. It is often heralded by the appearance of hemorrhage in the retinas and blindness. Papilledema occurs early. Symptoms and signs are often surprisingly slight until a few weeks, or even days, before death. The arterial pressure rises rapidly, but the diastolic pressure is usually proportionately higher than the systolic, producing a low pulse pressure. Renal efficiency may fall rapidly to a uremic level but in some cases is not much affected. Hemorrhages and exudate may all but obliterate the arterioles in the retinas. Edema of the retina and often detachment occur. These patients should be distinguished from a type occasionally seen during and for a year or more after pregnancy who have hemorrhages in the fundi. The hemorrhages are usually reabsorbed, and, while the pressure may remain elevated, the course of the disease is ordinarily markedly different from that of malignant hypertension.

EFFECTS OF SECTION OF THE ANTERIOR SPINAL NERVE ROOTS

The operation was usually performed in two stages by Dr. Heuer. The first stage consisted of a laminectomy, and from three to five days later the dura was opened and the nerve roots cut. The blood pressure usually fell to normal levels during both operations but rose moderately during the next few days. The patients suffered considerable pain in the back for several days after operation, but in most cases convalescence was uneventful. Some days were required before normal bowel function was reestablished, and some of the patients had difficulty in urination. During convalescence fluctuations of blood pressure were marked, but after several weeks it became more steady.

First, consideration will be given to the effects of the operation on the arterial blood pressure. I have gathered these results into tabular form, arbitrarily taking the average pressure over a period of several days every

5. Allen, E. V.; Lundy, J. S., and Adson, A. W.: Proc. Staff Meet., Mayo Clin. **11**: 401 (June 24) 1936.

6. Page, I. H.: Am. J. M. Sc. **190**: 9 (July) 1935.

six months after operation. Much more complete data will be found in the charts recently published by Page and Heuer.[3a]

Three of six patients with essential hypertension who exhibited signs and symptoms of the "hypertensive diencephalic syndrome" showed sustained reduction in blood pressure after operation, while the pressure of three others rose to the preoperative level during the course of twenty-four months. Of three patients without marked demonstrable vascular changes, but with immoderately high arterial pressure, two exhibited considerable reduction and one did not. Four of five patients with marked vascular changes showed only a temporary fall, and one exhibited a marked fall about ten months after operation. Eight patients with malignant hypertension were subjected to operation. In four the pressure was not influenced significantly, while in four others definitely lower levels were established.

While in most of the patients with essential hypertension a definite trend of the blood pressure upward was observed two years or more after operation, in others the lower levels have persisted. In no case has the blood pressure fallen to and remained at normal levels, allowing one to speak of a cure. In one of the patients with malignant hypertension the pressure appears to be very slowly falling after one year. This is not due to cardiac failure.

The symptomatic improvements are out of proportion to the fall in blood pressure. Particularly striking was the disappearance of headaches, lessening of the ease with which the patients became fatigued and loss of the nervousness, tenseness and irritability often so characteristic of the disease.

No change in renal efficiency, as measured by urea clearance or ability to concentrate urine, was observed which could be referred directly to the operation. When renal function was decreasing as a result of the disease, it continued to do so. It is my opinion that if change in renal function occurs it is associated more closely with the general clinical condition of the patient than with any direct effect the operation may have on the kidneys themselves.

The effect of the operation on the eyegrounds was in some cases remarkable. Relaxation of the constricted arterioles occurred in twelve cases. In one case of malignant hypertension complete reabsorption of hard white exudate occurred and hemorrhages and papilledema disappeared. The morbid changes in the patient's eyegrounds were marked. Clearing of such extensive changes I have never seen before, though it may occur in rare cases. In a second patient with malignant hyper-

TABLE 1.—*Effect of Section of the Anterior Nerve Roots on Arterial Pressure and Renal Function*

Case No.*	Age	Sex	Estimated Duration	Roots Sectioned	Preoperative		6 Mo. after Operation		12 Mo. after Operation		18 Mo. after Operation		24 Mo. after Operation		30 Mo. after Operation		Comment
					Blood Pressure	Urea Clearance	Blood Pressure	Urea Clearance	Blood Pressure	Urea Clearance	Blood Pressure	Urea Clearance	Blood Pressure	Urea Clearance	Blood Pressure	Urea Clearance	
A. Essential Hypertension with the "Hypertensive Diencephalic Syndrome"																	
1	23	♀	18 mo.	6D-2L	190/122	104	138/ 92	84	140/104	90	168/104	106	150/ 94	90	150/100	96	
2	24	♀	2 yr.	9D-1L	206/149	80	170/102	94	164/100	100	150/ 96	92	140/ 98	84			
3	17	♀	18 mo.	9D-1L	180/122	106	130/ 84	86	142/ 98	90	140/ 90	98	138/ 86	110	124/ 86	98	
4	32	♀	8 yr.	9D-1L	210/130	101	150/100	120	148/100	104	188/120	112	212/124	96			
5	25	♀	3 yr.	6D-2L	184/116	91	140/104	160	160/110	124	190/110	130	192/118	120	180/ 98	140	
8	25	♀	2 yr.	8D-1L	210/130	74	170/106	68	172/110	65	220/124	86	216/126	124			
B. Cases of Essential Hypertension with Moderate and Advanced Vascular Change																	
12	33	♀	10 yr.	8D-1L	258/140	90	200/118	90	196/134	110	222/126	88	230/136	99	224/126	91	
19	22	♀	2 yr.	8D-1L	260/160	31	250/156	22	204/124	15							
20	40	♂	3 yr.	7D-1L	240/150	92	210/134	76	230/138	...	.....	...	.....	...	.....	...	Died of apoplexy 12 mo. after operation
6	40	♀	2 yr.	9D-12D	230/142	72	210/122	55	246/148	...	.....	...	.....	...	.....	...	Died of apoplexy 10 mo. after operation
7	35	♀	3 yr.	7D-12D	190/122	88	190/110	58	.....	...	.....	...	200/118	103			
13	46	♂	15 yr.	9D-1L	270/160	68	220/144	56	250/156	15	260/163	3	.....	...	.....	...	Died of uremia 17 mo. after operation
C. Malignant Hypertension																	
9	26	♀	1 yr.	6D-12D	200/110	18	.....	...	.....	...	.....	...	.....	...	.....	...	Died during closure of the dura
10	24	♂	7 mo.	9D-1L	190/120	92	162/104	116	150/100	114	160/106	100	165/106	98	152/106		
11	26	♂	3 mo.	9D-1L	190/124	30	196/142	9	184/140	7	.....	...	.....	...	.....	...	Died
14	37	♂	2 yr.	7D-12D	270/170	55	.....	...	.....	...	.....	...	.....	...	.....	...	Died 1 mo. after operation, of apoplexy; blood pressure 220/150; urea clearance 56
15	44	♂	3 yr.	8D-1L	200/132	88	190/120	86	180/112	98	190/116	72					
21	21	♀	3 yr.	.....	256/150	104	258/148	102	204/118	110	270/165	88					
22	46	♀	12 yr.	.....	252/166	46	.....	...	.....	...	.....	...	.....	...	.....	...	Apoplexy; died 2 mo. after operation; blood pressure 200/140; urea clearance 28
23	22	♀	.....	.....	260/144	100	250/152	102	220/128	109							
D. Incomplete Operations																	
16	21	♂	Transverse lesion of spinal cord		200/132	119	138/ 90	50	140/ 96	116	146/110	91					
18	39	♀	6 yr.	.....	270/148	86	.....	...	.....	...	.....	...	.....	...	.....	...	Died as result of streptococcic infection 5 days after laminectomy
17	37	♂	7 yr.	.....	230/140	42	.....	...	.....	...	.....	...	.....	...	.....	...	Laminectomy, but no root section; blood pressure 270/172 3 mo. after operation

* These numbers refer to the detailed case reports in a paper by Page and Heuer.[3a]

tension there was also marked change for the better, but such extensive destruction had already occurred that it was hardly possible for complete repair to take place. Of interest is the fact that in one patient suffering from severe secondary hypertensive glaucoma the intra-ocular pressure became normal after operation and has remained so for twelve months.

Careful and repeated roentgen studies showed that slight reduction in the size of the cardiac shadow occurred in eight cases. For the most part no change was observed in the electrocardiogram. In two patients the T waves, which had been inverted in lead 1, became upright after operation.

Disability as a direct or indirect result of the operation has not been observed. None of the patients required abdominal binders to support the paralyzed portion of the abdominal wall, though many of the women wore corsets, as had been their custom. For several months after operation some of the patients complained of stiff or painful back muscles, but the complaints of all have disappeared. Although the operation is extensive, it cannot be called disabling, as performed by Dr. Heuer. I have observed no clinical signs or symptoms in any of the patients even after three years which suggest inadequate tissue oxygenation as a result of the lowered blood pressure.

TABLE 2.—*Effect of Resection of the Splanchnic Nerves on Arterial Blood Pressure and Renal Function*

Case No.	Age	Sex	Preoperative		3 Mo. after Operation		6 Mo. after Operation		18 Mo. after Operation	
			Blood Pressure	Urea Clearance	Blood Pressure	Urea Clearance	Blood Pressure	Urea Clearance	Blood Pressure	Urea Clearance
1*	46	♀	190/110	95	182/110	90	200/112	106	200/108	100
2	48	♀	230/120	120	202/106	120	220/120	108	210/118	96
3	37	♀	200/120	70	202/120	78	198/118	88	194/116	93
4	36	♂	210/130	102	230/142	88	240/146	90	218/130	64
5	25	♀	180/120	82	180/118	90	188/122	94	180/120	98
6	34	♀	216/126	94	180/110	90	188/110	94	198/124	95
7*	24	♂	226/134	118	220/140	76				
8†	25	♂	210/140	16	170/112	17	216/130	15		
9‡	18	♀	242/160	64	230/140	9				

* Cases 1 to 7 essential hypertension and 7 to 9 malignant hypertension.
† Died 9 months after operation.
‡ Died in fourth month after operation.

Section of the anterior spinal nerve roots is a difficult operation for the surgeon and has definite dangers. One patient died shortly after closure of the dura. She had seriously reduced renal function and was totally blind. The operation was performed in one stage. In the light of our experience we should not now attempt the operation on a patient with such advanced malignant hypertension, and if it was performed it would be done in two stages. One patient died three days after laminectomy from streptococcic meningitis. Dr. Heuer feels that this was due to a break in surgical technic. One patient with malignant hypertension had transverse myelitis at the eleventh thoracic segment, with paralysis of the legs, although only the laminectomy was performed. The blood pressure fell to a level which is practically normal and has remained at a level of from 130 to 170 mm. of mercury for a year and a half. There has been moderate return of sensation in the legs and slight return of motor power. Renal function was unchanged. This accident was serious and warns that the operation has inherent dangers.

SUMMARY

It may be said that the best clinical results have been obtained in two groups of patients: Relatively young persons with essential hypertension, who exhibited signs and symptoms of the "hypertensive diencephalic syndrome," and patients with malignant hypertension. Older patients suffering from hypertension of long standing do not appear to have been benefited by this operation. The question arises whether as good results could have been obtained by medical measures, such as treatment with sodium thiocyanate and rest in bed. I have employed such treatment in many cases, often with good results. I venture to suggest that the symptomatic relief is not as great as with operation, though this has not been proved. Improvement in the condition of the morbid ocular fundi is especially noticeable after operation and is, I believe, unusual after medical treatment. The effects of operation on malignant hypertension appear to be without parallel in medical treatment.

In my opinion the majority of patients with essential hypertension can still be treated best by medical means. However, operation may be desirable in the early stages of malignant hypertension and for young patients exhibiting the "hypertensive diencephalic syndrome."

Opposed to the good results that have been achieved are the accidents which occurred in three cases. Two of these could probably have been avoided and are not likely to happen again, while the third, the occurrence of transverse myelitis, still remains a serious hazard. Consequently, if an operation that is less difficult and dangerous is devised which offers equal results in selected cases, it will doubtless find a place in the therapeutics of hypertension. Perhaps Adson and Allen's new operation is a step in this direction.

SPLANCHNIC NERVE RESECTION

The operation of supradiaphragmatic splanchnic nerve resection combined with removal of the lower thoracic sympathetic ganglions has been practiced extensively in this country. Dr. Heuer has performed it on nine patients whom I have studied.[7] An effort was made to select a small but representative group, including young persons in whom the disease was benign, patients in whom the menopause had just passed, and patients in whom the disease was malignant.

The operation is a much less drastic one than section of the anterior spinal nerve roots, and there has been no operative mortality or serious complications. In some of the patients the operation was performed on one side and a week or more later on the other, while in others it was carried out in one stage.

During the operation and for days or weeks afterward the arterial pressure was markedly reduced without significant change in renal efficiency. But within nine months the pressure had returned in all cases to, or close to, the preoperative level (table 2).

Subjective improvement was marked in most of the patients with essential hypertension. This consisted of lessening in the frequency and the severity of headaches, and lessening of fatigue, nervousness, tenseness and irritability. But in three improvement lasted less than a year. Improvement in three patients with malignant hypertension was also transient.

Renal efficiency appeared to be unaffected by operation, although only one patient exhibited low urea clear-

7. A detailed report is contained in Page and Heuer.[3]

ance. It also appeared to have no significant effect on the heart as judged by electrocardiographic records or roentgenograms. Nor was any constant change observed in the pressor response to immersion of the hand in cold water (Hines-Brown test).

In one case of essential hypertension and two cases of malignant hypertension, papilledema disappeared after operation, but it reappeared in the latter cases within several months. Reduction in the intensity of the constriction of the retinal arterioles occurred in all of the cases of malignant hypertension except one, demonstrating that arteriolar relaxation occurs in regions other than those denervated. In most of the patients constriction returned after several months.

It thus appears that, while resection of the splanchnic nerves produces many of the effects that are observed after section of the anterior roots, they are often more transient. If a larger group had been operated on doubtless the results would have been more striking in a small percentage. From the point of view of technical ease and lack of dangerous complications, it is to be preferred to section of nerve roots, but, conversely, the good results appear to be somewhat more transient in most cases. In no case was I able to detect that the patient had been harmed by the procedure.

It is my belief that surgical methods which are designed to aid in the treatment of hypertension are still in the experimental stage. The results are not as good as had been hoped for by some, and not as bad as had been predicted by others. The operations which are now employed are probably far from the best, but it is becoming clearer what may be expected from the two operations which have here been discussed.

It is by no means certain what the theoretical basis is, in cases of hypertension, for performing operations in which large vascular areas are denervated. Normal as well as abnormal vasomotor impulses are naturally prevented from reaching normal or abnormal vessels to cause hypertonus. I know of no conclusive evidence that the nervous impulses are abnormal or that the vessels are unusually sensitive. It is of much interest that after operation vascular constriction in the eyegrounds relaxes. It is presumed, though not proved, that relaxation also occurs in the denervated area. Possibly the fall in blood pressure which takes place after operation causes a reflex dilatation of the vessels in the head somewhat similar to that found in animals [8] when the blood pressure falls to low levels. Whether the morbid changes in the fundi regress because of relaxation of the vascular spasm, reduction of the intracranial pressure or both cannot be affirmed with certainty. Measurement of the intraspinal pressure before and after operation has shown marked reduction when the pressure was elevated before operation. It seems that both factors are responsible for the changes in the eyegrounds.

It does not appear probable to me that a nonspecific operation would achieve the same results as root section. This opinion is strengthened chiefly by observation of one patient on whom a laminectomy was performed but who, for reasons of his own, refused the second stage of the operation, i. e., opening of the dura and section of the anterior spinal nerve roots. After operation the blood pressure soon regained its preoperative level and during the course of the next six months had appreciably exceeded it. If the shock and trauma of the operative procedure in general are responsible for the effects of the complete operation, this patient should have exhibited as well marked results as those in whom the anterior roots were actually severed, since laminectomy itself is by far the longest and most shocking part of the whole operation.

8. Forbes, H. S.; Nason, G. I., and Wortman, R. C.: Cerebral Circulation, Arch. Neurol. & Psychiat. **37**: 334 (Feb.) 1937. Fog, Mogens: Cerebral Circulation, ibid., p. 351.

MANAGEMENT OF POSTOPERATIVE DISTENTION AND ILEUS

THE USE OF PROSTIGMINE IN 175 CASES OF ABDOMINAL SURGERY COMPLICATED BY PARALYTIC ILEUS AND POSTOPERATIVE DISTENTION

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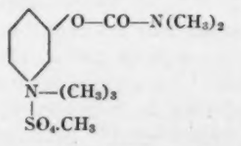
One of the grave postoperative complications is intestinal atony. The paralysis and distention accompanying intestinal atony contributes materially to the mortality of diffuse peritonitis. The patient's dread of abdominal surgery is deeply tinctured by fear of "gas pains," which are familiar even to the general public as the prominent symptom of a distressing, distention-ridden, postoperative course.

It is not surprising, therefore, that a wide variety of drugs, as well as a large number of mechanical procedures, have been developed to combat this unwelcome postoperative complication. One of these, physostigmine (eserine), was early used in the treatment of intestinal atony, but its stimulating action on the parasympathetic system may be evidenced not only by an increased intestinal peristalsis but also by bradycardia, dyspnea, miosis and a fall in blood pressure. Stedman and his co-workers,[1] in their work on substances capable of inducing responses similar to those induced by physostigmine, investigated the monoalkylcarbamic acids. Their investigations [2] culminated in the synthesis of dimethyl-carbamic ester of 3-hydroxyphenyl-trimethyl-ammonium methylsulfate, known as prostigmine. Its structural formula is:



PHARMACOLOGY

To quote, in part, from a recent editorial: [3]

> It [prostigmine] is a synthetic compound resembling physostigmine, but differing chemically from this alkaloid by its less complicated structure and its greater stability. It is marked by a pronounced action on peristalsis, a less pronounced miotic effect and an almost complete absence of cardiac by-effects. These characteristics have been carefully delineated

From the Cook County Hospital.

1. Stedman, E.: Fine Chemicals, Medicinal Substances and Essential Oils. Parasympathetic Stimulants, Reports of Progress of Applied Chemistry **16**: 621, 1931. White, A. C., and Stedman, E.: On the Physostigmine-like Action of Certain Synthetic Urethanes, J. Pharmacol. & Exper. Therap. **41**: 259 (March) 1931.

2. Aeschlimann, J. A., and Reinert, Marc: The Pharmacological Action of Some Analogues of Physostigmine, J. Pharmacol. & Exper. Therap. **43**: 413 (Nov.) 1931.

3. Peristaltic Stimulants, Editorial Comment, West. J. Surg., Obst. & Gynec. **43**: 711 (Dec.) 1935.

through the work of Aeschlimann and Reinert, Berk, Feldberg, Rothschild, and many others. Inspection of the massive bibliography reporting the clinical use of this product leaves one with the definite conviction that it must possess clinical merits distinctly above that of therapeutic agents formerly used. . . . Certain . . . of the studies, from well known clinics, are obviously scrupulously well controlled and cover very large numbers of cases. Reports covering the use of the drug running into well over a thousand cases indicate that it is harmless, clinically effective and has definite advantages over physostigmine.

The work of the authors mentioned[4] definitely established the efficacy of prostigmine as a peristaltic stimulant and the lessened incidence of toxic or untoward by-effects attending its use. The pharmacologic work of Aeschlimann and Reinert[2] established these facts: Physostigmine, in concentrations of 1:1,000, often stopped the isolated frog heart in diastole, while the same dilution of prostigmine was without effect beyond a slight decrease in the amplitude of contractions. A 1 per cent solution of physostigmine always stopped the frog heart in diastole, while prostigmine in like concentration had little or no effect. In doses up to 0.1 mg. per kilogram prostigmine was found to have practically no effect on the blood pressure; this dosage is much more than that required to induce peristalsis. In doses approaching toxicity, the action of prostigmine is similar to that of physostigmine. Even in extreme dilution, 1:5,000,000 and 1:7,500,000, prostigmine still caused contraction of the isolated rabbit intestine. The effective intravenous dose stimulating the bowel in situ was found to be 0.02 mg. per kilogram.

CLINICAL REPORTS

Levis and Axelman[5] used prostigmine to prevent postoperative atony and therefore began the administration of prostigmine shortly after, or at the time of, operation and continued medication as necessary. Prostigmine (1 cc. of a 1:4,000 solution) was given at intervals of from four to six hours until the condition of the patient warranted discontinuance of the medication. The last injection of prostigmine was followed by the administration of a soapsuds enema. Levis and Axelman found prostigmine valuable in combating distention and "gas pains." Prior to the use of this agent, from 60 to 75 per cent of their patients complained of subjective symptoms or exhibited objective signs of intestinal atony; the administration of prostigmine reduced the percentage to a negligible minimum.

Schlaepfer[6] begins prostigmine injections (1 cc. of a 1:2,000 solution) from eight to ten hours following the operation and repeats every eight hours until normal peristalsis is evidenced. Schlaepfer injected prostigmine intramuscularly and considers it "a very reliable agent to restore early normal peristalsis following laparotomy."

Baker,[7] in discussing the prevention of distention following kidney operations, says that, although a large enough series had not as yet been conducted, he is of the opinion that prostigmine is the most efficient prophylactic measure available. Cases of obstinate distention, developing despite all efforts at prophylaxis, are usually amenable to insertion of a duodenal drainage tube and the injection of prostigmine (the 1:2,000 solution). The injection should be given at intervals of from thirty to sixty minutes until three or four doses have been given or until distention has been relieved. In stubborn cases, the duodenal tube should not be removed until active peristalsis is manifest.

Uznanski[8] applied prostigmine both before and after operation. He found prostigmine valuable both as a prophylactic against and as a treatment for paralytic ileus and distention.

We have used prostigmine (the 1:4,000 solution) over a period of three months at the Cook County Hospital in 175 cases of abdominal operations. As will be seen from the representative case reports briefly abstracted, the conditions necessitating surgery were varied. In addition to the use of prostigmine in surgical cases, we have also applied it in uremia with associated paralytic ileus with gratifying results, and in one case of obstructive jaundice with coronary heart disease. In this instance a slight rise in blood pressure was noted, which rise, however, aided materially in the prognosis. We have found in prostigmine a very satisfactory method of controlling postoperative distention. No signs of drug intoxication were seen, nor were by-effects on the eye observed. There was no obvious evidence of hyperperistalsis and no complaints of excessive cramps. Except where noted, no adjuvant measures, such as enemas, stupes, heat cradle and the like, were used to enhance the action of prostigmine. The 1:4,000 solution of prostigmine methyl sulfate, administered subcutaneously, was used in all cases. If possible, prostigmine medication was started preoperatively.

REPORT OF CASES

CASE 1.—A. S., a white youth, aged 18, admitted to the hospital Oct. 28, 1936, with acute appendicitis of fifty-three hours' duration, was found at operation to have a ruptured appendix, with diffuse peritonitis. The appendix was removed and the abdomen closed without drainage.

On the first postoperative day there was moderate distention. No peristaltic sounds were heard, and no gas or feces were passed.

On the second postoperative day there was distention, no gas or feces having been passed since operation. The patient was given one ampule of prostigmine (0.00025 mg. of prostigmine methyl sulfate) at 10 a. m., the dose being repeated at 12 noon and 2 p. m. At 3:30, great quantities of gas were passed and peristaltic sounds were heard at the rate of 22 per minute.

On the third postoperative day prostigmine was given every two hours for four doses. The peristaltic sounds were 25 per minute. The feces and gas were passed twice in six hours.

The blood pressure on admission was 110 systolic, 80 diastolic, and at no time was it above 114/85 or below 108/90; the pupils appeared normal throughout the prostigmine medication. The patient did not complain of abdominal pain at any time during the course of prostigmine. An uneventful recovery ensued.

CASE 2.—J. V., a Negro, aged 36, admitted to the hospital Oct. 29, 1936, with a history of a scrotal hernia of four years' duration, had blood pressure of 128 systolic, 90 diastolic on admission. He was given two ampules of prostigmine two hours before operation and one additional ampule one hour before being taken to the operating room. Eight feet of intestine was found in the hernial sac at operation. The intestine, however, was entirely collapsed and was easily replaced into the abdominal cavity.

4. Berk, Louis: Ueber diastolische Strophanthinwirkung am isolierten Froschherzen nach Vorbehandlung mit parasympathischen Giften, Arch. f. exper. path. u. Pharmakol. **168:** 638, 1932. Feldberg, W.: Die Blutdrucksendene Wirkung der Chorda-Lingualisreizung und ihre Beeinflussung durch Atropin, ibid. **170:** 560, 1933. Rothschild, Fritz: Ueber ein neues Darmperistaltischum Prostigmin "Roche," Med. Klin. **28:** 365 (March 11) 1932. Aeschlimann and Reinert.[2]

5. Levis, W. R., and Axelman, E. L.: Modern Method for Prevention of Postoperative Distention, Am. J. Surg. **16:** 308 (May) 1936.

6. Schlaepfer, Karl: Relief of Postoperative Intestinal Atony with Prostigmine, West. J. Surg. **44:** 437 (July) 1936.

7. Baker, W. W., and Andrus, E. C.: Preoperative and Postoperative Care of Patients Undergoing Renal Surgery: Part 1. Urological Aspects, S. Clin. North America **16:** 1171 (Oct.) 1936.

8. Uznanski, M. E.: A New Treatment for Paralytic Ileus, Illinois M. J. **70:** 567 (Dec.) 1936.

On the first postoperative day, peristaltic sounds were 14 per minute. No gas or feces were passed, but the patient was free from distention. No prostigmine was given.

On the second postoperative day there was moderate distention. The peristaltic sounds were reduced to six per minute, and the abdomen was definitely tympanitic on percussion. Four ampules of prostigmine were given at two hour intervals. During the evening, four hours after the last dose, the patient passed considerable quantities of gas, but no hyperperistalsis occurred. The peristaltic sounds increased to seventeen per minute. A slight increase in blood pressure was noted at that time, 132 systolic, 94 diastolic.

On the third postoperative day both gas and fecal material were passed twice within seven hours. Prostigmine was continued, three ampules being administered, at the rate of one every two hours. The blood pressure was 130 systolic, 90 diastolic, and, although a slight miosis was evident, the pupils reacted normally to light and in accommodation. The patient was given 2 ounces (60 cc.) of liquid petrolatum. He volunteered the information that he felt "fine," and, except for a superficial wound infection which promptly responded to hot moist dressings, made an uneventful recovery.

CASE 3.—C. M., a white man, aged 23, admitted to the hospital Oct. 29, 1936, had a diagnosis of subdiaphragmatic abscess. At operation the ninth rib was resected and the abscess drained.

On the first postoperative day, distention was present, and only three or four peristaltic sounds were heard per minute. No gas or feces were passed. Prostigmine was begun, and one ampule was given every two hours for four doses, the last injection being given at 5 p. m. At 7 o'clock the peristaltic movements were from seventeen to twenty per minute, and gas was passed, resulting in considerable relief. A normal bowel movement occurred at 10:30.

On the second postoperative day, the patient was quite sick, with a temperature of 103.4 F.; the abdomen was moderately distended, and peristaltic sounds were from twelve to thirteen per minute. Three ampules of prostigmine were administered during the space of six hours, resulting in an increase of peristaltic sounds to twenty per minute, and two bowel movements were accompanied by much gas.

On the third postoperative day the patient was extremely ill and markedly distended. A diagnosis of generalized peritonitis was made. Four further doses of prostigmine were given; the patient passed gas and had a normal bowel movement. Despite the improvement following the decrease in distention, he died at 8:10 p. m.

There was no rise in blood pressure noted and the pupils remained normal in size throughout the postoperative course.

CASE 4.—B. M., a white man, aged 27, admitted to the hospital Nov. 3, 1936, with a diagnosis of acute appendicitis of thirty-six hours' duration, seemed in excellent condition, with no distention evident. At operation, an acute phlegmonous appendix was removed and the abdomen closed without drainage. There was no preoperative prostigmine medication.

On the first postoperative day the peristaltic sounds were twelve per minute. No distention was present but no gas or feces were passed.

On the second postoperative day, at 8 a. m., the abdomen was markedly distended, its crest being five finger breadths above the pubo-ensiform line. No gas or feces had been passed, and peristalsis occurred at the rate of from three to five movements per minute. Two ampules of prostigmine were given immediately, and then one ampule every three hours for four doses. At 4 p. m. the abdomen was still distended with tympanitis; peristaltic sounds had increased to eighteen per minute, although no gas had been passed. At 7:30 a large quantity of gas, mixed with feces, was expelled. Two ampules of prostigmine were given during the night.

On the third postoperative day the abdomen was soft and only slightly distended. Prostigmine was given at 9 a. m. and again at 11 o'clock. Following a high enema, the patient passed a large quantity of gas and feces and was subjectively much improved.

An uneventful recovery ensued; the patient became ambulant on the eighth day and returned home on the tenth day after operation. The blood pressure rose from 134/86 to 142/98 during prostigmine medication; no pupillary changes were noted at any time.

CASE 5.—A. Mc., a white man, aged 32, admitted to the hospital Nov. 4, 1936, had fallen from a scaffold while painting. He was in shock, with the pulse 140, temperature 97.6 F., respiration rate 32, blood pressure 80/65, and the skin cold and clammy. The blood count was hemoglobin 95 per cent, red blood cells 4,800,000, white blood cells 9,400. Because of the abdominal distention, the possibility of a ruptured viscus was considered. However, a catheterized specimen of urine revealed no blood, and fluoroscopy showed no free air under the diaphragm or above the liver. There were no masses felt in the abdomen and rigidity was not apparent. The patient responded to external heat, intravenous fluids, stimulants and reversed Fowler's position; twelve hours after admission he was considered to be out of shock, with pulse 100, respiratory rate 22, blood pressure 110/80, temperature 99.8 F. Marked distention was present, however, and an enema was given without results. No gas or feces had been passed since the accident. Two ampules of prostigmine were given at once, and subsequently one ampule was given every two hours for five doses. Within eight hours the peristaltic sounds had increased from two to three per minute to from fourteen to twenty-one, and the patient passed much gas and some fecal material. The next day three ampules of prostigmine, one every two hours, were injected. Two bowel movements resulted.

The patient suffered several fractured ribs and paralytic ileus developed. The results of prostigmine medication were most satisfactory, with no evidence of blood pressure or pupillary changes.

CASE 6.—J. V., a white man, aged 68, was transferred, Nov. 4, 1936, from the medical ward with a diagnosis of regional ileitis presenting partial obstruction. Although slight distention was present, prostigmine was not administered preoperatively. At operation, a regional ileitis involving the lower 12 inches of the ileum was found, the involved wall being markedly thickened, with distended bowel above the indurated area. Resection was not done but an anastomosis was performed above the obstruction.

On the first postoperative day the peristaltic sounds were seven per minute and there was moderately severe distention. A Levine tube was inserted and parenteral fluids were administered.

On the second postoperative day the distention was increased; the patient appeared quite ill. At 8 a. m. two ampules of prostigmine were given, followed by an equivalent dose at intervals of two hours. No gas was passed all day, however.

On the third postoperative day prostigmine, one ampule every two hours, was continued. At 1 p. m. the peristaltic sounds had increased to twenty-two per minute and the patient passed a huge quantity of gas mixed with considerable fecal material. At 8 o'clock no distention was evident.

On the fourth postoperative day one ampule of prostigmine was given every three hours. At 4 p. m. a normal bowel movement occurred, and gas was passed freely all day.

The blood pressure and pupils remained unchanged throughout the postoperative course. An uneventful recovery ensued.

CASE 7.—A. M., a white man, aged 32, admitted Nov. 6, 1936, with a diagnosis of chronic appendicitis, presented an excellent opportunity for a study of the value of preoperative prostigmine medication. He was given two ampules three hours before and one ampule immediately preceding operation. At operation the bowel was entirely collapsed and consequently presented no difficulty during the intra-abdominal manipulations necessary for the removal of the appendix.

The first postoperative day no distention was present, some gas was passed, but the patient had no bowel movement.

The rest of the postoperative course was entirely uneventful. Further prostigmine medication was not needed. There was no distention at any time, and a normal bowel movement occurred on the third postoperative day. A semisolid diet was given on the fifth postoperative day and the patient was ambulant on the eighth day. No change was noted in the patient's blood pressure, pupils or pulse as a result of prostigmine medication.

CASE 8.—N. A., a white boy, aged 14 years, admitted Nov. 6, 1936, following injury to the pelvis sustained in an automobile accident, was in severe shock and, in addition, presented a rigid abdomen with a definite mass in the right lower quadrant. He was treated for shock, during which time (six hours) it was decided that laparotomy should be performed in order to determine the extent of injury. He was given two ampules of prostigmine before surgery. When the abdomen was opened, the entire bowel was collapsed, making discovery of a large retroperitoneal hematoma a simple matter. The abdomen was closed without further intervention.

The first postoperative day the general condition was poor. A scultetus binder was applied, and because the peristaltic sounds were few, from three to four per minute, and no gas or feces had been passed, Wangensteen decompression was instituted; enemas were also employed without results. A diagnosis of paralytic ileus was made and solution of posterior pituitary, one ampule every two hours for four doses, was given without relief.

On the second postoperative day, prostigmine medication was reinstituted, one ampule being injected every two hours. After the fourth dose the peristaltic movements had increased to ten per minute, and the patient passed some gas, thereby relieving the distention appreciably. Seven hours later, the prostigmine being continued throughout, a bowel movement occurred.

The patient recovered satisfactorily, although the subsequent course was rather hectic. Two transfusions were necessary, and occasional enemas were required to enhance the action of prostigmine. This case is particularly interesting not only because of the extreme degree of ileus but also because frequent prostigmine dosage, even in a 14 year old boy, resulted in no untoward effects. The frequency of administration was double that suggested by the manufacturer, as, indeed, it was in most of our cases, but no signs of toxicity occurred.

CASE 9.—M. D., a Negro, aged 39, admitted to the hospital Nov. 7, 1936, with a diagnosis of chronic cholecystitis and cholelithiasis, in addition presented evidence of marked bowel spasticity and distention. Two ampules of prostigmine were given at 9 p. m. the night before the operation, another ampule at 8 a. m. the following morning and one immediately preceding the operation. Both the large and the small bowel were found to be totally collapsed. The gallbladder was easily found and removed without difficulty and the abdomen was closed with the liver bed drained.

On the first postoperative day there was no distention; the condition was good.

On the second postoperative day there was slight distention; no gas or feces were passed; there was some vomiting.

On the third postoperative day the abdomen was moderately distended. Solution of posterior pituitary, two ampules, was given at 8 a. m., and then one ampule every two hours for distention. Gas was passed at 4 p. m., but the marked elevation of blood pressure, 20 points systolic, convinced us that solution of posterior pituitary should not be used further.

On the fourth postoperative day prostigmine was administered for distention—two ampules at once, repeated in two hours and followed by one ampule every two hours for four doses. At 9 p. m. both gas and feces were passed. The blood pressure remained normal.

On the fifth postoperative day gas and feces were again passed, with relief of distention. Prostigmine was given every two hours for four doses, with excellent objective and subjective results. After the fourth day slight contraction of the pupils was noted, and from then on an uneventful recovery ensued.

CASE 10.—B. V., a white man, aged 52, admitted to the hospital Nov. 17, 1936, with a diagnosis of acute intestinal obstruction, had suffered for two days from vomiting, abdominal distention and complete obstipation. A cecostomy was performed; on operation, the site of obstruction was thought to be the rectosigmoid junction.

On the first postoperative day the patient's condition was poor. Repeated enemas returned clear.

On the second postoperative day a slight quantity of gas escaped when the cecostomy was opened, along with a small amount of fecal material. Distention was extreme, but no further measures were instituted.

On the third postoperative day gas continued to be expelled in small quantities through the cecostomy. At 8 a. m. two ampules of prostigmine were given, and one ampule was given every two hours thereafter for six doses. At 6 p. m. a large quantity of gas was expelled, together with considerable fecal material.

On the fourth postoperative day, distention was much reduced. Feces and gas were passed freely through the cecostomy, and the patient's condition was considered excellent. Four doses of prostigmine were given, one ampule every three hours.

On the fifth postoperative day, distention was completely relieved; there was no pain, and gas and feces were passed freely. No further prostigmine was given.

The subsequent course was entirely without incident. An exploratory laparotomy on the twentieth postoperative day revealed the presence of a carcinoma of the sigmoid with extensive metastases. The blood pressure remained normal throughout prostigmine administration; the pupils, however, became slightly sluggish in accommodation and miotic.

CASE 11.—V. W., a white man, aged 47, admitted to the hospital Nov. 18, 1936, in severe shock, showed evidence of peritonitis and pneumoperitoneum. No preoperative medication was administered. At operation a ruptured gastric ulcer was found, and fluid and gastric contents were found in the abdominal cavity. The ulcer was sutured and the abdomen closed without drainage.

On the first postoperative day, marked distention and tympanites occurred; peristaltic sounds were only four per minute. Wangensteen decompression was begun and parenteral fluids were given. No feces or gas were passed.

On the second postoperative day, distention was still marked; no gas was passed nor were any peristaltic sounds heard. Solution of posterior pituitary was given, one ampule every two hours for five doses. No gas had been passed by midnight, and enemas were entirely without results.

On the third postoperative day, at 8 a. m., two ampules of prostigmine were administered, followed by a similar dose at 10 o'clock. Doses of three ampules were then given at intervals of two hours. At 2 p. m. a low saline enema resulted in the expulsion of much gas and fecal material.

On the fourth postoperative day distention was much diminished and the patient was passing gas freely. Prostigmine was continued in one ampule doses every three hours for four injections, and a normal bowel movement occurred at 7 p. m.

On the fifth postoperative day peristaltic sounds were eighteen per minute and the distention had vanished. The patient went on to recovery with no complications. The blood pressure and the eyes were normal throughout.

COMMENT

Prostigmine has a wide margin of safety. Although intervals between doses of from four to six hours are recommended, and but one ampule per dose, we have constantly given the drug at two hour intervals to patients ranging in age from 14 to 68 years with no demonstrable ill effects. Reports hitherto have recommended longer intervals than two hours. Our results convince us that prostigmine may be given more frequently and in larger doses with assurance of a satisfactory response and no danger of untoward by-effects.

SUMMARY

1. Prostigmine was used in 175 cases.

2. Prostigmine, a 1:4,000 solution of the dimethylcarbamic ester of 3-hydroxyphenyl-ammonium methylsulfate, is a satisfactory agent for the prevention or treatment of distention and paralytic ileus.

3. In our series of cases, the administration of prostigmine was followed by excellent results with a low incidence of by-effects.

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CONTRACEPTION IN PRIVATE PRACTICE

A TWELVE YEAR EXPERIENCE

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The contraceptive service reported here developed within a general family practice in a residential suburb of a large city. The initial impulse to study contraception came twenty years ago from the requests of professional patients acquainted with the beginnings of a literature on the subject. An enduring stimulus has been provided by the succession of women patients in distress from unwise pregnancies. In the last ten years it has become a routine matter to discuss contraception with postpartum patients and to teach better methods whenever they are needed and welcomed.

INDICATIONS

The indication for contraceptive knowledge and advice is, broadly considered, marriage. Of course, some patients have come in the late thirties or early forties because they wished to have no more children, and others have been referred because of obvious physical or mental contraindications to pregnancy. But in recent years an increasing number of young women have come to learn how to plan and space their children. Those advised premaritally have sought to postpone the first pregnancy while gainfully employed or until they felt better adjusted. Women usually need from one to two years of protection after childbirth before conceiving again.

METHODS

About 94 per cent of all the patients advised have been given the occlusive vaginal diaphragm with jelly. This paper, therefore, is essentially a report and discussion of the use of that method. It has become the preferred contraceptive of a large majority of couples. The most frequent structural conditions interfering with the fit of the diaphragm have been cystocele and marked relaxations of the pelvic floor and vaginal walls with some uterine descent. Retroversion of the uterus has seldom been a contraindication, although it has often required a special manner of insertion. Sound anterior vaginal structure and other conditions which allow the rim to stay well up against the rear face of the symphysis pubis are essential to the use of the circular diaphragm. The Matrisalus was designed to support a sagging anterior wall but in this series has rarely been successfully adjusted. In recent years a Dumas pessary, a rather broad, shallow, all-rubber cap, has been found to fit well high behind or beyond the bulging cystocele.

In early years only starch-glycerite jellies with 1 or 2 per cent lactic acid were prescribed for use with the diaphragm. In time these have been replaced by modified starch-glycerite and by vegetable gum preparations also dependent on acidity[1] for spermicidal action. Modified soap creams, usually containing paraformaldehyde, have also been employed. The variety of modern jellies makes it possible to individualize the prescription of jelly, and the trend away from high percentages of glycerin has reduced the frequency of complaints of messiness. Because one patient will complain of this jelly and another of that, judgment or trial and error must find the appropriate prescription in each case.

Premarital patients have often been advised in the use of the condom or condom with jelly and later fitted with the diaphragm, but a large proportion of the premarital patients readily learn the diaphragm technic. Premarital examination and discussion present real opportunities for educational and preventive work.

For the details of fitting and teaching, the reader is referred to the discussion in Control of Conception by Dickinson and Bryant.[2] Judgment in fitting comes with experience and repeated check-up examinations. A routine check-up soon after fitting has not always been found possible but is essential for premarital and recently married patients. Emphasis has rather been placed on adequate initial instruction. Success in teaching depends on painstaking work with each patient. From a half to three quarters of an hour may be required for office explanation and practice by the patient.

CHARACTERISTICS OF SAMPLE STUDIED

In the twelve years that ended in 1936, contraceptive advice was given to 884 white patients. One fourth of these were of the premarital group. The median[3] age at the first contraceptive consultation was 27.3 years, and the median duration of marriage 4.3 years for those who were already married. The median married patient reported two previous pregnancies, but one fourth of the married women had never conceived. The patients came mainly from upper middle class homes with annual incomes ranging roughly from $3,000 to $10,000. One fifth might be termed wealthy, while three fourths were of the professional or business middle class and one twentieth of the laboring class. Seventy per cent of those who reported their education had received some college training or the equivalent. Twenty-three per cent had progressed no further than high school and 7 per cent no further than elementary school. Ninety-four per cent were Protestants.

NATURE OF THE INVESTIGATION

The patients who were also part of the family practice usually had complete follow-up records because of the many opportunities to study them. The patients in a part of the series, increasing rapidly since 1930, were referred by their friends or physicians. Since they applied only for contraception, they gave less opportunity for close observation. One fourth of all those advised were never reached again for follow-up.

In 1936 a cooperative arrangement was made with the National Committee on Maternal Health for an intensive study of the available case material, and a follow-up by letter and interview was attempted in all cases in which the history was incomplete. The letter elicited slightly more than a 50 per cent response. Analysis of the case material extant prior to this follow-up indicates that the women who answered the letter had had proportionately the same number of unplanned pregnancies as those who failed to answer. But it also shows that those who answered had previously reported relatively many more planned pregnancies than those who did not respond.

1. For a discussion of acidity see Shedlovsky, L.: (Some Acidic Properties of Contraceptive Jellies, J. Contraception 2: 147-155 [Aug.-Sept.] 1937).

2. Dickinson, R. L., and Bryant, L. S.: Control of Conception, Baltimore, Williams & Wilkins Company, 1931.

3. That is, 50 per cent were above and 50 per cent below this age. Because of the nature of the distributions, the median is a more representative value than the mean.

ACCEPTABILITY OF DIAPHRAGM AND JELLY

The frequency with which patients have persevered with a contraceptive method is one measure of its acceptability. Of all those on whom reports are available, 83 per cent were using the method at the time of the last follow-up entry. But many of those who stopped no longer needed protection against pregnancy, as table 1 indicates. The refusal rate, therefore, may well be from 15 to 20 per cent, but lack of follow-up on one fourth of the patients originally seen seriously limits the value of this estimate. The low frequency of failure as a reason for discontinuance results from two conditions: first, some patients who had unplanned pregnancies recognized the fault as their own and resumed the method with success later; and, second, a number of the patients reporting unplanned pregnancies gave no indication of whether or not they resumed the method at the termination of the pregnancy. One might expect failure with the method to be given greater relative importance in a list

TABLE 1.—*Alleged Reasons for Discontinuing Diaphragm and Jelly*

Reason for Discontinuance	Patients Known to Have Stopped	
	Number	Per Cent
Cessation of exposure to risk of pregnancy*	25	24
Objections on the part of the wife	25	24
Objections on the part of the husband	11	11
Preference for another method	16	15
Failure with the method†	12	12
Lack of confidence	3	3
Other reasons, or several	6	6
Reason unknown	5	5
Totals	103	100

* Cessation of exposure includes instances of sterilization, menopause, separation or divorce, and pelvic inflammatory disease.

† Patients who felt that their unplanned pregnancies could not be attributed to their own carelessness or errors.

of reasons for discontinuance. The average patient who stopped using the method had tried it for less than nine months, and 45 per cent of those who stopped did so within six months.

While there has been no systematic study of the complaints made by patients who continued using the method, spontaneous objections entered on the records have been tabulated. Six per cent of those followed up complained of discomfort or annoyance from the diaphragm and jelly, and half of the objections were of outright discomfort on the part of the wife. A fourth of these were complaints against the necessity for advance preparation and a sacrifice of best feeling.

In consulting with patients on their contraceptive problems, the doctor has come to appreciate the limitations of the method: it is a less than ideal procedure. A few notes on unfavorable reactions illustrate this point: "I hated it!" "Backache after several hours." "Advance preparation tends to diminish desire." "It produced too much secretion and caused restlessness." "The ideal method would be a suppository or a perfected jelly. The 'cap,' while certainly useful, is a nuisance."

The impression is strong in the physician's mind, although it is not often on record, that many of those who abandoned the method after a trial were women who derived little or no satisfaction from coitus with or without contraception. The 15 or 20 per cent who found the method unacceptable constitute a group urgently in need of individualized counsel and prescription, and the physician must be prepared to offer other advice even though the risk of pregnancy is greater than with the diaphragm and jelly. As a matter of fact, the risk of pregnancy with any common method can be reduced by careful instruction.

It is equally apparent that the diaphragm and jelly method has offered real advantages to a large majority of patients in private practice seeking contraceptive advice. It is definitely superior to other present methods in point of acceptibility to these patients and will serve reasonably well until ideal procedures are developed.

EFFECTIVENESS OF DIAPHRAGM AND JELLY

Published data on the clinical effectiveness of diaphragm and jelly, and in fact almost all data on the clinical effectiveness of contraceptives, have been based on inadequate methods of analysis. The customary procedure has been to enumerate the number of patients who suffered unplanned pregnancy, despite faithful following of instructions, and then to state this number as a percentage of the total number studied. The contraceptive method is then said to have yielded the stipulated percentage of failures. The major statistical defect of this method lies in its neglect of the time factor, overlooked in no other field of vital statistics. The computation of probabilities of birth, death and other vital events is always with reference to time. Unless one takes time into account when measuring the clinical effectiveness of contraceptive methods, one inevitably records higher percentages of failure as longer periods of time are observed. For example, if it is shown that with 100 normal users of a particular contraceptive method three is the average number of pregnancies per year of use, then it is clear that the average number of pregnancies for 100 patients during five years will approach fifteen and that the average for ten years will approach thirty. In other words, the application of this technic gives percentages of failure which have no specific meaning because time is not held constant.

For the reason that they bring time into the calculations in a fashion similar to that currently used for measuring the incidence of vital phenomena, the best available statistical procedures are those developed for fertility measurement by Pearl [4] and by Stix and Notestein.[5] Their methods [6] permit the calculation of a pregnancy rate which is 100 times the number of pregnancies divided by the number of woman-years [7] of exposure to risk of pregnancy. Exposure to the risk of pregnancy is measured in months and years and is derived by subtracting from the years of marriage falling between puberty and the menopause the time during which the wife was pregnant or was known not to be exposed to the risk of pregnancy because of sterility or abstinence. In addition, in this study, one month in excess of each reported period of gestation has been deducted as an allowance for the puerperium. No consensus has been reached as to the best method for controlling the factor of lactation, which is thought

4. Pearl, Raymond: Contraception and Fertility in 2,000 Women, Human Biol. **4**: 363-407 (Sept.) 1932; Factors in Human Fertility and Their Statistical Evaluation, Lancet **2**: 607-611 (Sept. 9) 1933.

5. Stix, Regine K., and Notestein, F. W.: (*a*) Effectiveness of Birth Control, Milbank Memorial Fund Quart. **12**: 57-68 (Jan.) 1934; (*b*) Effectiveness of Birth Control: A Second Study, ibid. **13**: 162-178 (April) 1935.

6. Pearl has perhaps more often expressed his results as pregnancies per hundred computed ovulations.

7. One hundred woman-years would be the exposure of 100 women for twelve months each, ten women for 120 months, or the equivalent.

to be associated with infecundity [8] through absence of ovulation and which therefore probably exerts some yet unmeasured influence on all pregnancy rates except those for first pregnancies and for planned pregnancies. Obviously, pregnancy rates may be computed for exposure with or without contraception, and the difference between a rate for noncontraceptive exposure and a rate for contraceptive exposure is one measure of the effectiveness of contraception in reducing the chance of pregnancy.

TABLE 2.—*Pregnancy Rates from Other Studies When No Contraception Was Used and When Some Contraception Was Used, and Pregnancy Rates for this Series Before Advice Was Given*

	Pregnancy Rates from Other Studies					Pregnancy Rates from This Study Before Advice Was Given
	No Contraception Used			Contraception Used†		
Order of Pregnancy*	Pearl‡	Stix and Notestein§	Beebe and Gamble‖	Stix and Notestein§	Beebe and Gamble‖	
All pregnancies.	107	168	99	28	42	41
First pregnancies.....	154	268	119	41	52	74
Subsequent pregnancies...	86	105	86	27	40	31

* In view of the significant differences between rates for first and rates for subsequent pregnancies, the distinction is kept here.

† The rates are based on only that portion of each patient's experience when preclinic contraception was used. Pearl's rates for contraceptors include their experience while not relying on contraception and for that reason are not strictly comparable. His rates for all pregnancies of whites in New York and Chicago were 68 and 63 respectively.

‡ Pearl, Raymond: Fertility and Contraception in New York and Chicago, J. A. M. A. **108**: 1385-1390 (April 24) 1937. Rates for all white women have been calculated from the data there given. Pearl's rates are not by order of pregnancy but by parity of women. In consequence, his rates for multiparas include some experience at the higher first pregnancy rate and have been adjusted on the assumption that the multiparas had first pregnancies at the same rate as the primiparas. The unadjusted rates are 107, 154 and 99.

§ Stix and Notestein.[5b]

‖ Beebe, G. W., and Gamble, C. J.: The Effect of Contraception on Human Fertility; unpublished data from a manufacturing district in Philadelphia.

As a basis for estimating the probable fertility reduction accomplished by the use of diaphragm and jelly in this series, table 2 draws on other studies for the pregnancy rates of patients when they avoided contraception and when they used it in some form. Table 2 also includes the pregnancy rates of the patients in this series before they came for contraceptive advice. The rates for noncontraception, while differing markedly with respect to first pregnancies, indicate that pregnancies may be expected at the minimum rate of 100 for each 100 woman-years of exposure when all pregnancies are studied, and from 85 to 105 when second and subsequent pregnancies are considered. Ordinary untutored contraception results in rates from 25 to 50, with differences depending largely on the order of pregnancy, the methods used and the care exercised. The low rates found in this study for the period before contraceptive advice was given indicate an extensive resort to contraception. Since these rates are based on all experience, both contraceptive and noncontraceptive, the contraceptive efforts of the patients in this series were, even before they sought medical advice, above average in efficiency.

While relying on diaphragm and jelly, the patients in this series became pregnant at a rate which is only from 4 to 7 per cent of the rate at which women conceive while habitually practicing no contraception. Otherwise stated, their use of the diaphragm and jelly was from 93 to 96 per cent effective as compared with habitual noncontraception. It should be noted that this statement of effectiveness is entirely different from a statement of the percentage in which the method did not fail. Table 3 gives the details of exposure, pregnancies and pregnancy rates specific by duration of marriage interval. These results are based on the experience of 542 patients, 342 having been excluded as follows: 217 for lack of follow-up on diaphragm and jelly; seventeen for possible sterility; eighty [9] for lack of complete data, and twenty-eight for lack of exposure to the risk of pregnancy when using diaphragm and jelly.

The pregnancies recorded are the unplanned pregnancies of women who used diaphragm and jelly but who in many instances did not themselves blame the method because they relied on supplementary methods or were definitely careless. The rates [10] are based on all unplanned pregnancies rather than on failures of the method for the reason that, to delete pregnancies apparently resulting from nonuse or technical errors of the patient would be justified only if there were a corresponding deduction of the exposure of patients when they took chances without becoming pregnant. Unfortunately, the latter cannot even be estimated. It is to be expected, however, that a rate based on such a selected experience would be even lower than the rate of six derived in table 3. Furthermore, any estimate of the number of unplanned pregnancies which may be called failures of the method is, at best, based on inference. Finally, one is clinically interested in the results of a method as used, and one expects the regularity and technical competence of the patient to be in part at least influenced by the acceptability of the method. Different population groups, precisely because they may be expected to employ the same method with varying regularity and skill, will probably have somewhat different rates while using it.

TABLE 3.—*Months of Exposure, Unplanned Pregnancies and Unplanned Pregnancy Rates of Patients Depending Wholly or Partly on Diaphragm and Jelly, by Order of Pregnancy and by Duration of Marriage*

Order of Pregnancy and Duration of Marriage	Months of Exposure	Number of Unplanned Pregnancies	Unplanned Pregnancies per 100 Women—Years of Exposure
All pregnancies.....	15,509	80	6
First pregnancies.....	4,290	21	6
Subsequent pregnancies.....	11,219	59	6
By duration of marriage interval			
0 - 5.0 years.....	2,617	21	10
5.1-10.0 years.....	4,233	31	9
10.1-15.0 years.....	3,144	6	2
15.1-20.0 years.....	1,071	1	1
20.1-30.0 years.....	154	0	0

A rough measure of the comparative effectiveness of the previous methods with the diaphragm and jelly may be obtained by contrasting the second and subsequent pregnancies for the two periods. While using diaphragm and jelly, these patients experienced fifty-nine second or subsequent pregnancies; if the chance of pregnancy had not been reduced by the diaphragm

8. Cooper, J. M.: Birth Control, Washington, National Catholic Welfare Council, 1923; a summary of medical literature appears on pp. 71-73 and 95.

9. The patients thus excluded had reported six unplanned pregnancies and hence had a lower relative incidence of unplanned pregnancy than the included patients.

10. The pregnancy rates are weighted mean probabilities of unplanned conception stated in terms of pregnancies per hundred woman-years of exposure.

and jelly but had continued at the previous level, there would have resulted 242 pregnancies. In other words, the chance of pregnancy was reduced about 75 per cent. Even if as many as half of the earlier pregnancies were planned, the chance of unplanned pregnancy was reduced approximately 50 per cent by diaphragm and jelly.

Patients reporting unplanned pregnancies were questioned or examined, or both, for possible explanations for their failure. Only 29 per cent of those who reported unplanned pregnancies had histories of careful use which gave no explanation for their conceptions. The conditions which may have led to conception are given in table 4. At most, forty-two of the eighty-six unplanned pregnancies might be termed failures of the method. The relative incidence of failure among the 622 users of diaphragm and jelly who have been followed up may therefore be stated as roughly 7 per cent. The value of this estimate for comparative purposes may be greatly enhanced if it is borne in mind that the average duration of exposure with diaphragm and jelly was approximately twenty-nine months, and the average length of follow-up thirty-nine months.

TABLE 4.—*Possible Reasons for Unplanned Pregnancies Among Users of Diaphragm and Jelly Method*

Possible Reason for Unplanned Pregnancy	Unplanned Pregnancies	
	Number	Per Cent
Omission	28	33
Error in technic	15	18
Poor fit, initially	6	7
Poor fit, through changes in position of cervix and uterus	3	3
Diaphragm worn over support pessary	1	1
Defective diaphragm	1	1
Reason unknown, but failed to return for check-up on technic	1	1
No information, but failure known	6	7
No reason known, technic satisfactory	25	29
Totals	86	100

Comparisons have been made between those reporting unplanned pregnancies and the remainder of the patients in order to ascertain whether there were important differences that might explain why some patients had unplanned pregnancies while others did not. From the information available, the only important difference found was in fertility before contraceptive advice was sought. Those reporting unplanned pregnancies with diaphragm and jelly were more fertile [11] before their first visit as well as after. Before the contraceptive consultation their first pregnancy rate was more than twice as high (174 in comparison with 69) as that of other patients in the series, and their rate for subsequent pregnancies was 47 as compared with 30 for the remainder of the sample.

PLANNED PREGNANCY

Not the least important aspect of the control of conception is the planning of conception. In this series 131 patients have reported 167 planned pregnancies spaced by prescribed contraceptive methods. That those who planned their pregnancies were a selected group is indicated by the observation that more than 40 per cent were first seen before marriage,[12] while only 20 per cent of the nonplanners were seen before marriage. The planners also were younger, better educated and, if married, had been married a shorter time and had experienced fewer pregnancies than the nonplanners.

Of those who were seen premaritally, three fourths conceived their first planned pregnancy within two and a half years after marriage, an additional fifth within four and a half years, and all within six and a half years. Of those who were married at the first visit but who had previously not been pregnant, one third conceived their first planned pregnancies within two and a half years after marriage, and an additional half within four and a half years.

The time required for conception was reported for 136 planned pregnancies. Fifty-one per cent were conceived within one month, 76 per cent within three months and 90 per cent within six months.[13] When the months required for conception were summed up, the total of 400 months gave for this special form of noncontraception a pregnancy rate of 408, which is from two to four times as great as rates reported for habitual noncontraception. This rate compares with that of 446 obtained by Stix and Notestein [5b] with a sample roughly four times the size of the present one. The rate of 408 would be lowered to 360 by the inclusion of the five patients who had been attempting conception for from eight to fourteen months at the time of their last follow-up and who were among the seventeen possibly sterile women excluded from the computation of pregnancy rates in table 3. The indication is clear that contraceptive practice such as is discussed here does not interfere with the basic capacity to conceive. On the contrary, these patients exhibited high fertility when they ceased contraception for planned pregnancy.

SUMMARY

In twelve years contraception has become an important part of a general medical practice. The 884 white patients advised have been predominantly from upper middle class homes, of Protestant background, and college trained or the equivalent. Ninety-four per cent have been taught the diaphragm and jelly method. Analysis of the experience of the 662 patients who have been followed up indicates that:

1. The acceptance rate of the diaphragm and jelly method was 83 per cent—high enough to justify its routine prescription in private practice and low enough to illustrate the need for other prescriptions to a significant minority.

2. The chance of unplanned pregnancy, while relying wholly or partly on diaphragm and jelly, may be stated as six pregnancies per hundred woman-years of exposure for this group. This rate represents a reduction of from 93 to 96 per cent in the risk of pregnancy incurred by women habitually practicing no contraception.

3. Half of the eighty-six unplanned pregnancies followed errors or omissions that might account for conception.

4. The successful use of diaphragm and jelly did not retard conception after the method had been set aside for planned conception. The time required for conception was reported for 136 of the 167 pregnancies known to have been planned. Half were conceived within one month and three fourths within three months.

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11. This difference may reflect differences in basic fecundity, in resort to contraception or in the skill and regularity with which chosen methods were practiced.

12. If the new patients of the last year are excluded and only patients first seen between 1925 and 1936 considered, one third of all those seen premaritally later reported planned pregnancies.

13. In a smaller series of sixty-eight planned pregnancies reported by patients seeking contraceptive advice, 37 per cent were conceived within one month, 77 per cent within three months and 88 per cent within six months.

RATIONAL USE OF ACACIA IN TREATMENT OF THE NEPHROTIC SYNDROME

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The principal fault in the nephrotic syndrome is the loss of protein through damaged glomeruli. The proteins in the blood plasma decrease, so the effective osmotic pressure of the plasma is decreased and an abnormal amount of fluid escapes into the tissue, producing edema. This condition appears only after much of the body protein, such as muscles, has been depleted.[1] Hartmann [2] in 1933 presented a series of cases of the nephrotic syndrome in children in which he raised the effective osmotic pressure of the plasma by giving large amounts of acacia intravenously and profuse diuresis resulted. Subsequent experience has shown that if a sufficient amount of acacia is given to patients with the syndrome who have no renal insufficiency, diuresis will always occur. The effect unfortunately is only temporary, as the acacia is excreted rapidly (60 per cent in seven days). Obviously one cannot continue to inject acacia every week indefinitely, as there is reason to believe that it accumulates in the liver and the spleen [3] and presumably if given over a long period might cause some ill effect.

Indeed, McCann,[4] in his review of Bright's disease for 1936, after discussing the work of Dick,[3] said "In view of such experience the further use of acacia seems unwarranted." However, critical analysis of the work of Dick and his associates will reveal that their conclusions are subject to question. They attempted to show, in children and in dogs, that acacia interferes with the production of protein. After injections of acacia they observed in both children and dogs a fall in the plasma protein content. The profound changes in blood volume associated with rapid diuresis or with the injections make estimations of the plasma protein inaccurate, even though the results of determinations of the blood volume were available; therefore it becomes clear that conclusions drawn from their experiments are of little value. If one judges by the experience of Hartmann and others, these experimenters used larger doses of acacia than were necessary. Furthermore, patients 1 and 2 of their series were entirely unsuitable for the experiments, as they were clearly in the acute stage of the disease and were subject to the highly variable conditions found in that stage. Most of the patients were infants, to whom it would be difficult to give a high protein diet, and without this diet the administration of acacia must be repeated indefinitely, which might eventually be harmful.

As a result of such studies and opinions, the use of this valuable asset in the management of the nephrotic syndrome has been largely abandoned. However, if acacia is used only to eliminate the edema and a diet extremely high in animal protein is instituted from the beginning, a definite increase in the plasma protein content will occur in most cases and will prevent the recurrence of edema. Repeated doses of acacia will then not be necessary.

I shall present three typical cases of chronic nephritis with the nephrotic syndrome in which acacia was an invaluable adjunct to the treatment. The edema has not returned in any of the three cases, though acacia was used only during the first few weeks and they have been observed over periods of from one to three years. I have found in each case a definite increase in plasma protein, a result contrary to previous reports. The patients were first seen as physical and psychologic invalids, and they have been returned to normal life; one is in school and the others are making good incomes. It is impossible to say how long this well being will persist. Oddly enough, patient 1 seems to be completely cured, as he has had no albuminuria during the past year. It is important to emphasize that there were no infants in this series, as it is clear that this regimen is not easily adaptable to infants. I therefore make a plea for the use of acacia to eliminate edema while the more lasting beneficial effects of a diet high in animal protein are instituted. The patients feel much better and are psychologically improved when the edema disappears.[5]

REPORT OF CASES

CASE 1.—W. L., a Negro boy, aged 8, was admitted to Parkland Hospital Aug. 12, 1935, complaining of swelling of the face, abdomen and extremities. He had been well until May 1935, when swelling of his face associated with a severe infection of the upper respiratory tract developed. These symptoms subsided within three weeks and he was well until July 1935, when gradually increasing swelling of the face, abdomen and legs developed; he did not feel sick in any other way. He was admitted to the hospital July 15, where he remained for five days, and the edema completely disappeared. The attack was doubtless acute glomerulonephritis, as the plasma protein content was 6.6 Gm., the albumin content was 4.6 Gm. and the urine showed a 3 plus reaction for albumin, which, however, soon became negative. The patient remained well until August 1, when increasing anasarca developed.

My examination revealed that the boy was small and had edema of the legs and the face and had marked ascites. He did not appear ill. The blood pressure was 110 systolic, 70 diastolic, the pulse rate 90 and the respiratory rate 25. The tonsils were normal, the pupils reacted to light and in accommodation and the ophthalmoscopic examination gave negative results. The heart was not enlarged, and the sounds were normal; the lungs were clear. The abdomen was full of fluid, and there was edema of the scrotum and penis. The results of the laboratory examination are shown in table 1. The outstanding observations were persistent albuminuria, a normal blood urea content, a blood cholesterol content of 220 mg. and a plasma protein content of 5 Gm. The Mosenthal test was negative, and there was no anemia. The Wassermann and the Kahn reaction were negative. An intravenous pyelogram showed nothing significant. The diagnosis was chronic nephritis with the nephrotic syndrome.

The patient was confined to bed on admission and given a high protein, low salt diet. He was given many diuretics, including theobromine, caffeine, ammonium nitrate and salyrgan, with no effect. He was also given from 1 to 3 grains (0.06 to 0.2 Gm.) of thyroid extract daily for a prolonged period. The edema increased as shown by a rise in weight from 63 pounds (28.6 Kg.) on admission to 76 pounds (34.5 Kg.) on November 27, the day the first dose of acacia was given. At

From the Baylor University and Parkland hospitals.

1. Shelburne, S. A., and Egloff, W. C.: Experimental Edema, Arch. Int. Med. **45**: 51-69 (July) 1931.
2. Hartmann, A. F.; Senn, M. J. E.; Nelson, M. V., and Perley, A. M.: The Use of Acacia in the Treatment of Edema, J. A. M. A. **100**: 251 (Jan. 28) 1933.
3. Dick, M. W.; Warweg, Edna, and Andersch, Marie: Acacia in Treatment of Nephrosis, J. A. M. A. **105**: 654 (Aug. 31) 1935.
4. McCann, W. S.: Bright's Disease: A Review of Recent Literature, Arch. Int. Med. **57**: 630 (March) 1936.

5. After the manuscript of this paper had been submitted, several papers of great importance appeared. Both M. J. Lepore (Acacia Therapy in Nephrotic Edema, Ann. Int. Med. **16**: 285 [Aug.] 1937) and E. M. Landis (Observations on Acacia Therapy in Nephrosis, J. A. M. A. **109**: 2030 [Dec. 18] 1937) point out the great efficacy of acacia in removing this type of edema and the harmlessness of the product. Neither of these studies stressed the principal thesis of my paper, i. e., the temporary use of acacia for diuresis and the dependence on high protein diet for permanent effects. Landis (personal communication) reports one failure in a recent case, which he is unable to explain. Heckel (Blood Plasma Proteins as Influenced by Intravenous Injections of Gum Acacia, J. Exper. Med. **67**: 345 [March] 1938) shows beyond doubt the ill effect of the continued use of acacia. The continuous use of acacia should be avoided even if edema returns.

this time the patient's condition was regarded as a hopeless problem and he was referred from the pediatric department to my service, with little hope that anything of value could be done. I felt that the trial of acacia provided a discouraging outlook, as the reports at that time were none too optimistic. The patient had had several abdominal paracenteses, and the fluid reaccumulated rapidly. He had had three large blood transfusions without the slightest effect on the urinary output. It might be worth while at this point to add that I have never had any beneficial results from blood transfusions.

The patient was given 100 cc. of acacia solution (30 Gm., Lilly) in 200 cc. of water on November 27, with no change in weight the following day. This dose was repeated on November 29. The next day his weight was 69 pounds (31 Kg.), and three days later, when he was given another similar dose, it was down to 65 pounds (29.5 Kg.). It had fallen to 57 pounds (26 Kg.) on December 6. When a fourth dose was administered on December 9, the patient weighed 52½ pounds (24 Kg.) and had no trace of edema. There was a total loss of weight of 24 pounds (11 Kg.) within thirteen days, representing 31 per cent of the total body weight.

CASE 2.—J. W. H., an adult man, who was referred to me by Dr. H. A. O'Brien of Dallas, Texas, on Feb. 12, 1936, complained of extreme swelling of the legs and abdomen, great exhaustion and loss of flesh. The loss of flesh was most noticeable in the upper extremities, doubtless because of the edema elsewhere. He stated that he had been well until June 1935, when he began to have exhaustion, which increased until the edema appeared in July. An examination of the urine at this time showed a 4 plus reaction for albumin and a few red blood cells and casts. A diagnosis of chronic nephritis was made, and the patient was treated with rest, a low protein diet and extraction of his teeth. He did not improve with this program, and he was admitted to a hospital in Temple, Texas, in November 1935. It was found that he was excreting from 8 to 15 Gm. of albumin per day. The serum protein content was 5.4 Gm. per hundred cubic centimeters, and the urine was normal except for albumin and an occasional red blood cell. The blood urea content was 25 mg. per hundred cubic centimeters. The phenolsulfonphthalein excretion was 53 per cent, the electrocardiogram was normal, the basal metabolic rate was minus 19 and the Wassermann and Kahn reactions were negative.

TABLE 1.—*Progress in Case 1*

Date	Weight, Pounds	Edema	Plasma Protein, Gm.*	Blood Urea Nitrogen, Mg.	Blood Cholesterol, Mg.	Hemoglobin, Percentage	Urine Protein, Gm.	Acacia, Gm.	Comment
8/14/35	63	+++	5.0	16	220	70	10	0	
9/ 7/35	70	++++	4.9	14	...	70	12	0	
11/27/35	76	++++	5.0	15	...	70	++++	30	
11/29/35	74	++++	...	..	...	..	..	30	
11/30/35	69	+++	...	..	...	..	..	..	
12/ 3/35	65	++	...	.	...	..	..	30	
12/ 6/35	57	+	...	..	...	..	..	..	
12/ 9/35	52	0	...	..	...	..	..	30	Lost 24 pounds
12/11/35	51	..	5.0	12	...	70	+++	0	Total acacia, 120 Gm.
3/11/36	56	+?	4.9	11	100	70	++	0	No edema
3/19/37	58	0	7.6	12	110	80	+	0	Pus in urine

* Albumin-globulin ratios were determined in each instance but are not reported here.

TABLE 2.—*Progress in Case 2*

Date	Weight, Pounds	Edema	Plasma Protein, Gm.*	Blood Urea Nitrogen, Mg.	Blood Cholesterol, Mg.	Hemoglobin, Percentage	Urine Protein, Gm.	Acacia, Gm.	Comment
11/12/35	186	++++	5.3	12	...	82	12.0	0	Temple, Texas
2/14/36	187	++++	5.8	11	167	98	6.3	30	
2/16/36	...	++	...	..	...	..	...	60	
2/18/36	181	..	...	..	...	..	...	..	
2/20/36	180	..	...	..	...	..	...	60	
3/10/36	171	..	...	..	...	..	...	60	Total acacia, 210 Gm.
3/13/36	171	0	...	..	...	..	...	..	
12/29/36	174	0	7.0	9	...	90	8.0	0	No symptoms
7/20/37	174	0	6.4	12	...	90	8.0	0	Phenolsulfonphthalein excretion normal; no symptoms

The patient remained well, going to school and playing actively, until Feb. 15, 1936, when ascites began to return. He was admitted to the hospital on March 2 for observation. At that time his weight was 56 pounds (25.4 Kg.). Examination gave negative results except that it showed a small amount of fluid in the abdomen. The laboratory studies showed nothing abnormal except albumin in the urine, mild secondary anemia and a low plasma protein content. The cholesterol content at this time was 100 mg. The patient was given a high protein diet, and the ascites promptly disappeared. This recurrence was doubtless due to failure of the parents to supply him with the high protein diet.

After the patient's discharge in March 1936 we had great difficulty in observing him, as he was so well the family refused to bring him in. Finally, a year later, on March 19, 1937, he came into the clinic. The urine at that time had a specific gravity of 1.025, a 1 plus reaction for albumin and a 3 plus reaction for white blood cells. We could not determine the origin of the pus in the urine, but a later examination gave negative results throughout. The blood count was normal, the plasma protein content 7.6 Gm., the albumin content 4.3 Gm. and the globulin content 3.3 Gm.

Roentgenograms of the gastro-intestinal tract and of the kidney, ureter and bladder showed nothing abnormal. Examination of the nose and throat showed a heavy secretion in the nose, a deflected septum and infected tonsils.

The patient was advised to eat a normal diet, but no other direct treatment was suggested. He continued to have extreme edema and exhaustion and was unable to go about his regular duties. He was under the care of a local physician during this period. This physician gave him a number of injections of salyrgan, which provided temporary diuresis, with rapid return of the edema. He was also treated with thyroid and received one transfusion, with little or no effect.

My examination showed that the patient was well developed, with a large frame. Muscular atrophy was present, which could be seen best in the shoulder girdle, as there was extensive edema of the legs and marked ascites. Some edema was present in the eyelids. The remainder of the examination showed nothing abnormal except a tender prostate, fluid from which showed some pus. A laboratory examination was performed in the hospital, and the results are reported in table 2. The outstanding observations were a low plasma protein content, a normal cholesterol content, a large daily output of albumin in

the urine and a normal urea nitrogen content and excretion of phenolsulfonphthalein. The diagnosis was chronic nephritis with the nephrotic syndrome.

The patient was immediately placed on a high protein diet and given a large beefsteak every night. He has remained on this diet since that time. He was given 100 cc. of a 30 per cent acacia solution in 400 cc. of water on February 14. Two days later he received 200 cc. of the same solution, and on the eighteenth he had lost 6 pounds (2.7 Kg.), his weight having dropped from 187 to 181 pounds (85 to 82 Kg.). He received 200 cc. of acacia solution on February 20 and a similar amount on March 10. On March 13 he weighed 171 pounds (77.6 Kg.), a total loss of 16 pounds (7.3 Kg.), having taken place. It is interesting to note that the loss of weight was gradual during this month of treatment. The patient's condition was greatly improved; he was able to return to work, and he has since been working constantly, living on a regimen no different from that of the average person, except that he eats a large thick steak every night and high protein foods at the other meals. It is interesting to note that he has shown a definite and persistent increase in the plasma protein content, as shown in the table, since he has been on the high protein diet.

CASE 3.—E. V., a white man, aged 20, had been perfectly well until January 1936, when, without any prodromal symptoms, a gradually increasing swelling of his entire body, including the face, developed. He then began to have moderate shortness of breath. This symptom was not present before the onset of the edema and was not marked thereafter. He remained in bed for one month and the edema disappeared, but it recurred when he got up and about again. He was studied in a hospital in Temple, Texas, and a diagnosis of chronic nephritis was made. He was placed on a low salt and low protein diet, with no benefit. The swelling persisted until I saw him on July 15, 1936, but he had no other symptoms except weakness and cramping of his arms and legs. He was unable to work because of the weakness and the edema.

At examination he looked healthy and well nourished but had marked edema below the knees. The retina was entirely normal, the throat was particularly clean, the teeth were normal, the lungs were clear, the heart was not enlarged and the sounds were normal. The blood pressure was 138 systolic, 82 diastolic. There was some ascites. The examination otherwise gave negative results. The results of laboratory study are shown in table 3. The outstanding observations were the extremely low serum protein content, 3.1 Gm. per hundred cubic centimeters, normal nitrogen and cholesterol levels and a large amount of albumin in the urine, with very few red cells and no casts. The diagnosis was chronic nephritis with the nephrotic syndrome.

The patient was placed on the usual high protein diet and given a large steak each night. An interesting point in this case is the fact that he did not follow directions at first in regard to the size of his steak and had to have the administration of acacia repeated after the preliminary period. However, since that time he has followed directions closely and has had no recurrence of edema. He was given 200 cc. of 30 per cent acacia solution July 17, and this dose was repeated on July 19, and again on July 23. He was also given 100 cc. on July 25. On July 29 he had lost all his edema, his weight having gone down from 150 to 136 pounds (68 to 62 Kg.). By an error, he was given an additional 200 cc. of acacia and had a severe reaction, with chill and vascular collapse, but recovered within six hours. This was the first and only reaction of any severity which we observed, and it was due to negligence.

The patient was sent home an August 3 but failed to follow his high protein diet closely and had to receive 150 Gm. of acacia from his local physician. He has since been careful to eat the large steaks, and the administration of acacia has not had to be repeated. I made a complete examination of him on March 17, 1937, and found no edema, but he was excreting large quantities of albumin daily (maximum, 12 Gm.). However, the serum protein content had increased from 3.1 Gm. to 5.6 Gm. per hundred cubic centimeters. The urea nitrogen content was 18 mg. and the phenolsulfonphthalein excretion 89 per cent. The urine contained few red cells and no casts. The patient was feeling fine and had been working hard for the past year. He was reexamined on Sept. 14, 1937, and appeared perfectly well. His muscles had developed magnificently, but he was still excreting large amounts of albumin. The serum protein content was 3.7 Gm. He was working full time and felt well.

TABLE 3.—*Progress in Case 3*

Date	Weight, Pounds	Edema	Plasma Protein, Gm.*	Blood Urea Nitrogen, Mg.	Blood Cholesterol, Mg.	Hemoglobin, Percentage	Urine Protein, Gm.	Acacia, Gm.	Comment
7/16/36	150	++++	4.1	13	167	80	10	60	
7/19/36	145	+++	...	..	...	..	..	60	
7/23/36	140	+	...	..	...	..	..	60	
7/25/36	136	0	...	..	...	..	..	30	Lost 14 pounds
7/29/36	136	0	4.0	15	180	80	12	60	Total acacia, 270 Gm.; lost 60 Gm. by error
10/27/36	135	0	3.1	12	160	85	12	0	
3/17/37	140	0	5.6	13	194	..	12	0	
9/14/37	145	0	3.7	14	190	77	12	0	Muscular development excellent

COMMENT

One might properly ask why acacia should be used in the treatment of the nephrotic syndrome if the lasting benefits are derived wholly from the use of a high protein diet. In the first place, the high protein diet alone will rarely raise the level of plasma proteins fast enough to eliminate the edema. This is doubtless because the patients have to take the diet over a long period and are discouraged before results can be attained. By using acacia one can in every case eliminate the edema within a few days. The patient is greatly encouraged by this dramatic effect, his confidence is restored and his psychologic improvement is enormous. He is not so obviously a sick man and is able to resume contact with the public. The relief from the edema increases his comfort, as he has suffered with a tight feeling in his abdomen and his feet and usually has had dyspnea. The removal of the fluid completely eliminates the danger of peritonitis, which is such a dreaded complication. The tissue nutrition should be improved by the elimination of the edema fluid.

The limitations of the use of acacia are too many to mention here, though it is important to note that its use is not worth while when the edema associated with chronic nephritis is due to cardiac failure or to capillary damage. It is not useful in the treatment of starvation edema, as this type of edema can quickly be corrected by the eating of protein food. It should not be used in the management of acute forms of nephritis, as the associated edema is practically always due to damaged capillaries and not to a low plasma protein content. Furthermore, the tendency to cure in such cases is so great that acacia therapy is not necessary. Its usefulness in the treatment of infants is problematic. Doubtless it will relieve edema due to a low plasma

protein content, but, since the infant cannot be given a sufficiently high protein diet, the benefits are not lasting.

SUMMARY

The advantage of acacia therapy in the management of chronic nephritis with the nephrotic syndrome was demonstrated in three cases. An important point is that the acacia was used only as a temporary measure for the elimination of edema in the very beginning and that the principal therapeutic measure is the use of a diet high in animal protein.

Medical Arts Building.

THE RATIONALE OF SULFANILAMIDE IN GONOCOCCIC URETHRITIS

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No therapeutic agent used in the treatment of gonorrhea has caused as much comment as sulfanilamide. One may read of its use in lay and medical periodicals. As yet, no experimental work has been advanced to explain its action in urethral infections. The experiments reported here were conducted in our laboratory to find out how the drug acts on genito-urinary infections.

Reuter [1] reports 100 cases of gonorrhea in which treatment with sulfanilamide was given by mouth. There were approximately sixty cases of chronic infection and forty of acute anterior urethritis. About 90 per cent of these cases were reported as cured; none of them showed any complications. Dees and Colston [2] report nineteen cases of gonorrhea in various stages in which treatment was with sulfanilamide. They report about 90 per cent of their patients cured. Likewise, no complications were noted, and the following comment is made: "It has been especially impressive to us that the infection in none of our treated cases has progressed from anterior to posterior urethritis or from anterior urethritis to prostatitis or epididymitis after the institution of the treatment."

One of us (Farrell) has treated ten cases of gonorrheal urethritis with sulfanilamide by mouth. Only five of the patients responded to treatment. The other five seemed to derive little benefit from the drug, as evidenced by persistent discharge, so that local treatment was begun. None of the ten patients had any complications such as posterior urethritis, prostatitis or epididymitis. Because of the repeated observations by the various observers that no complications occur, it seemed advisable to us to determine a rational basis for the use of sulfanilamide in gonorrhea. Marshall [3] has shown that sulfanilamide is rapidly absorbed from the gastro-intestinal tract and enters practically all fluids of the body and that it is excreted almost entirely through the kidneys, from 70 to 93 per cent being excreted in twenty-four hours. Marshall also reports that it usually takes from two to three days to establish an equilibrium between intake and output. In the dog the normal excretion occurs about four hours after the ingestion of the drug. He found that from 11 to 16 mg. of sulfanilamide is present in 100 cc. of blood in the treated dog.

Buttle, Colebrook and O'Meara [4] have shown that sulfanilamide is active in vivo in from 1,000 to 13,000 parts in the blood against streptococci. Control specimens of blood showed an increased growth of streptococci.

Helmholz [5] has shown that the urine of patients taking sulfanilamide by mouth is strongly bactericidal against the organisms usually found in infections of the urinary tract. The drug appeared to be more active in alkaline urine.

EXPERIMENTAL DATA

Large male dogs were used in our experiments. The dogs were given sulfanilamide by mouth for several days, the daily dose being approximately 0.18 Gm. per kilogram. The dogs were anesthetized with pentobarbital sodium given intravenously. In order to collect the secretion from the posterior urethra, the urethra was tied off at the bladder opening and a cannula placed in the portion just distal to the prostate gland. Thus we were able to collect the prostatic secretion and also the secretion of the glands of the posterior urethra uncontaminated with urine or blood. In addition, samples of blood and urine were collected from each dog. The content of sulfanilamide in these specimens was determined by the method described by Marshall. The results are given in table 1.

TABLE 1.—*Content of Sulfanilamide in Blood, Prostatic Secretion and Urine*

Dog	Dosage of Sulfanilamide	Mg. of Sulfanilamide in 100 Cc.		
		Blood	Prostatic Secretion	Urine
1	10 grains 3 times a day	7.6	3.8	3.2
2	10 grains 3 times a day	3.7	3.4	2.1
3	10 grains 4 times a day	16.6	13.2	11.3
4	10 grains 4 times a day	17.3	15.1	14.0

TABLE 2.—*Effect of Prostatic Secretion on Staphylococci and Colon Bacilli*

	Colon Bacilli				Staphylococci			
	0	2 Hrs.	4 Hrs.	24 Hrs.	0	2 Hrs.	4 Hrs.	24 Hrs.
Dog 1 normal prostatic secretion	In.	672	26	0	In.	In.	10	40
Dog 2 after sulfanilamide	In.	104	0	0	In.	In.	64	38
Dog 2 normal prostatic secretion	In.	In.	320	0	In.	In.	80	0
Dog 1 after sulfanilamide	In.	432	108	0	In.	In.	160	8

In. means innumerable.

The first two dogs were operated on several hours after their last dose of sulfanilamide was given. Dogs 3 and 4 were operated on between the third and fourth hour after their last dose of sulfanilamide. The concentration of the sulfanilamide in the secretion obtained from the prostatic urethra is slightly greater than the concentration in the urine.

From the Departments of Urology and Bacteriology, Northwestern University Medical School.

1. Reuter, F. A.: Use of Sulfanilamide in 100 Cases of Gonorrhea, M. Ann. District of Columbia **6**: 117 (May) 1937.

2. Dees, J. E., and Colston, J. A. C.: Sulfanilamide in Gonococcic Infections, J. A. M. A. **108**: 1855-1858 (May 29) 1937.

3. Marshall, E. K., Jr.; Emerson, Kendall, Jr., and Cutting, W. C.: Sulfanilamide Absorption and Excretion, J. A. M. A. **108**: 953-957 (March 20) 1937.

4. Colebrook, Leonard; Buttle, G. A. H., and O'Meara, R. A. Q.: Mode of Action of Sulfanilamide, Lancet **2**: 1323 (Dec. 5) 1936.

5. Helmholz, H. F.: Bactericidal Power of Urine After Administration of Prontylin by Mouth, Proc. Staff Meet., Mayo Clin. **12**: 244-245 (April 21) 1937.

After recovering the drug in the urine and prostatic secretion in such concentrations, we sent the specimens to the bacteriology laboratory, where they were tested against the strains of staphylococci and colon bacilli. Gonococci were not used because of their extreme susceptibility to change in various mediums and temperatures, it being thought best to try the bactericidal action against the more common organisms.

Table 2 shows the effect of prostatic secretion, both from normal dogs and from dogs given sulfanilamide, on staphylococci and on colon bacilli.

TABLE 3.—*Germicidal Activity of Sulfanilamide on Prostatic Fluid*

Sample	Organisms	Number of Colonies Time of Plating in 0	2 Hrs.	4 Hrs.	24 Hrs.
1. Normal	Coli	In.	In.	368	0
Sulfanilamide	Coli	In.	In.	322	0
H_2O	Coli	In.	In.	In.	In.
2. Normal	Coli	In.	240	768	48
Sulfanilamide	Coli	In.	20	10	0
H_2O	Coli	In.	In.	In.	In.
Normal	Staph. aureus	In.	In.	In.	78
Sulfanilamide	Staph. aureus	In.	In.	In.	0
H_2O	Staph. aureus	In.	In.	In.	In.

In order to determine whether the drug was effective when given intravenously and at the same time have a control prostatic secretion from the same dog, two animals were anesthetized and the prostatic secretion was collected. One and five-tenths grams of sulfanilamide dissolved in 200 cc. of physiologic solution of sodium chloride was given intravenously; the prostatic secretion was then collected for a period of two hours. The results are recorded in table 3.

METHODS

The prostatic fluid was tubed aseptically in 1 cc. amounts in sterile Wassermann tubes. The tubes, together with a control tube of sterile distilled water, were inoculated with one standard 4 mm. loopful of a twenty-four hour meat infusion broth culture of either Staphylococcus aureus or B. coli. The tubes were then placed in the incubator at 37 C. and agar plate subcultures made immediately, at two, four and twenty-four hour intervals by transferring one standard loopful to a tube of melted and partially cooled meat infusion agar. The plates were incubated at 37 C. for forty-eight hours and examined to determine the number of colonies present. Actual counts were made when possible; otherwise the number of colonies was recorded as innumerable, innumerable plus or innumerable minus, or compared with the control.

RESULTS

The prostatic fluid of two dogs which had received sulfanilamide intravenously after a sample of normal prostatic fluid had been obtained was tested for germicidal activity. Both samples were tested with B. coli and only one with Staphylococcus aureus, as shown in table 3.

The sulfanilamide is excreted in bactericidal concentrations, in both the urine and the secretion of the posterior urethra, when adequate doses are given. According to our experiments, from 10 to 15 mg. of sulfanilamide seems to be adequate antiseptic concentration. The experiments demonstrate that the bactericidal power of prostatic secretion on colon bacilli and Staphylococcus aureus is marked. In twenty-four hours all the bacteria were reduced in number. In dogs given sulfanilamide in approximately human doses, there were no viable bacteria on the plate at the end of twenty-four hours.

COMMENT

The foregoing experiments give one a logical explanation of the action of sulfanilamide in the genito-urinary tract. When the kidney is normal, the drug is excreted in concentrations that are bactericidal. This means that the lower genito-urinary tract is continually in contact with a strongly bactericidal urine. The secretions of the posterior urethra, notably the secretion of the prostate gland, have a similar effect. The drug content in this secretion prevents the spread of gonococci into the posterior urethra. It is a well recognized clinical fact that a posterior urethritis is the forerunner of the serious complications of gonorrhea such as prostatitis, epididymitis and arthritis. The infection of the posterior urethra is effectually prevented by the excretion of sulfanilamide in the prostatic secretion, and this effectually confines the urethritis to the anterior urethra.

SUMMARY

Sulfanilamide, when given in adequate amounts, is secreted in the urine and prostatic secretion in bactericidal concentration. When the drug was given in smaller amounts it did not appear to be as effective as when administered in larger amounts.

The drug appears to act directly on the infecting organisms in the urinary tract.

636 Church Street.

THE SUCTION TEST FOR CAPILLARY RESISTANCE IN THROMBOCYTOPENIC PURPURA

R. H. EGERTON ELLIOTT, M.D.

NEW YORK

It has long been recognized that a state of lowered capillary resistance exists in patients with thrombocytopenic purpura. It has furthermore been recognized that the degree of lessened resistance is in general proportional to the severity of the disease process. Therefore a determination of the state of resistance of the capillaries is generally included among the measures employed to ascertain the presence and the activity of the disease. The three principal methods which have been used in this determination are (1) the tourniquet test, (2) the intradermal venom test and (3) the suction test.

The tourniquet test was introduced as a method of measuring capillary resistance in 1911 by Weill, Rumpel, Leed and others. Despite the recent introduction of qualitative [1] and quantitative [2] modifications, this type of determination leaves much to be desired, as it is both cumbersome and time consuming. Furthermore, it is poorly adapted to measuring the degree and the rapidity of the fluctuations in capillary resistance which may occur in patients with purpura.

From the Department of Surgery, Columbia University College of Physicians and Surgeons, and the Spleen Clinic of the Presbyterian Hospital.

1. Jones, H. W., and Tocantins, L. M.: A Simple Test for Capillary Resistance: The "Flicking" Test, Am. J. M. Sc. **185**: 535 (April) 1933.

2. Göthlin, G. F.: A Method of Establishing the Vitamin C Standard and Requirements of Physically Healthy Individuals by Testing the Strength of Their Cutaneous Capillaries, Skandinav. Arch. f. Physiol. **61**: 225 (May) 1931.

The intradermal venom test was first described by Peck [3] in 1936. I have had little experience with it, but it would seem likewise to have the disadvantage of being of little assistance in following the daily course of the severity of the disease as reflected by the resistance of the capillaries.

The suction method of measuring capillary resistance is by no means new. First described by Hecht in 1907

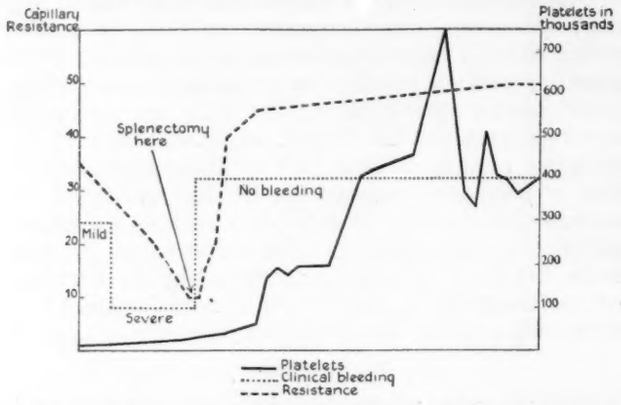

Chart 1.—Clinical course in a case of idiopathic thrombocytopenic purpura haemorrhagica in which the spleen was removed twelve days after admission because of failure of conservative therapeutic measures. In the charts the solid line indicates platelets, the broken line capillary resistance and the dotted line bleeding.

and only recently popularized by da Silva Mello abroad and Dalldorf in this country, it has been used principally in cases of scurvy. Strangely enough, though there are abundant references in the recent literature to its use in the treatment of that condition and though it is undoubtedly being widely used in cases of the hemorrhagic diatheses, we were able to find only four brief accounts of its use in the treatment of purpura. Brühl [4] described its use in a case of idiopathic thrombocytopenic purpura but said little about the method itself; Brock and Malcus,[5] in discussing its use in the treatment of various hemorrhagic conditions, cited Brühl's case and briefly mentioned one of their own in which it was used; Falconer, Epstein and Weaver [6] mentioned its use in two cases of purpura following neoarsphenamine therapy, and Peck, Rosenthal and Erf [7] in their recent article on purpura described the histopathology of the petechiae produced in patients with that condition by its use.

Of the three aforementioned methods of determining capillary resistance, the suction test has appealed to my co-workers and me as the most desirable by virtue of its simplicity, relative accuracy and rapidity of operation. Of even more importance is the fact that it seems to be the best available method for measuring the daily or hourly fluctuations in resistance so often encountered in patients with thrombocytopenic purpura. During the past two years therefore its use on all patients with purpura treated in the Spleen Clinic of the Presbyterian Hospital has become a matter of routine.

3. Peck, S. M.; Rosenthal, Nathan, and Erf, L. A.: The Value of the Prognostic Venom Reaction in Thrombocytopenic Purpura, J. A. M. A. **106:** 1783 (May 23) 1936.

4. Brühl, H.: Beiträge zum Kinderheitsbild und zur Behandlung des Morbus maculosus Werlhofi, Ztschr. f. Kinderh. **54:** 159, 1933.

5. Brock, Joachim, and Malcus, Anneliese: Ueber die Capillarresistenz im Kindesalter, Ztschr. f. Kinderh. **56:** 239, 1934.

6. Falconer, E. H.; Epstein, N. N., and Weaver, G. K.: Purpura Haemorrhagica Following the Administration of Neoarsphenamine, Arch. Int. Med. **58:** 495 (Sept.) 1936.

7. Peck, S. M.; Rosenthal, Nathan, and Erf, Lowell: Purpura: Classification and Treatment, with Special Reference to Treatment with Snake Venom, Arch. Dermat. & Syph. **35:** 831 (May) 1937.

Using the Dalldorf modification of the da Silva Mello instrument,[8] our procedure has been to apply suction to the forearm about 2 cm. distal to the antecubital fossa. A given negative pressure is maintained for one minute and a reading taken. The lowest negative pressure giving a positive reaction is considered to be the capillary resistance. For a reading to be positive a minimum of two petechiae must be clearly discernible.

The method, as has been pointed out by Dalldorf and others, is by no means absolutely accurate, for too many variables, such as thickness, texture and color of the skin and varying intensities of light, are present. For this reason we do not attempt to measure resistance values below minus 10 cm. of mercury or above minus 50. We do feel, however, that the test gives a reasonably accurate estimate of the state and change of capillary resistance when performed on a given area of skin and, when possible, by a single observer.

NORMAL VALUES

In general our "normal" values for capillary resistance measured just below the antecubital fossa with the Dalldorf apparatus agree closely with those of other observers. The majority of healthy adults whom we have tested have given values falling within the range of from minus 20 to minus 35 cm. of mercury. In the presence of suspected or proved ill health, values below minus 20 have been considered abnormal.

CLINICAL MATERIAL

As has been stated previously, determinations of the capillary resistance are performed as a matter of routine at each visit of all patients with purpura who attend the Spleen Clinic of the Presbyterian Hospital. In all, some thirty-five persons with purpura, not to mention numerous persons with various other types of blood dyscrasias, are being so observed.

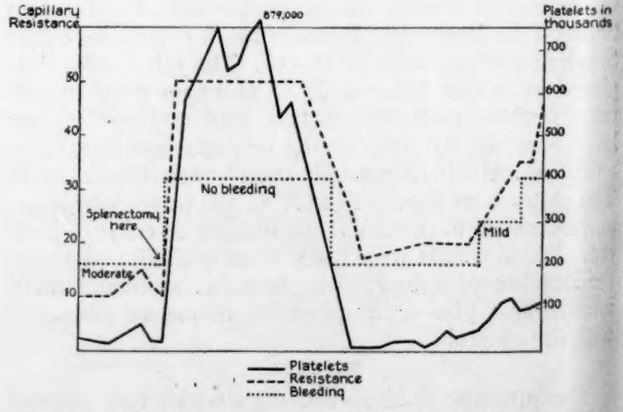

Chart 2.—Clinical course in a case of idiopathic thrombocytopenic purpura haemorrhagica in which splenectomy was performed three weeks after admission because a conservative regimen did not cause improvement.

It has been our experience that in each case the values for capillary resistance tend to parallel closely the bleeding tendency, low values being present in the active phases of the disease and higher, or normal, values in the inactive phases. Furthermore, we have found this to be true irrespective of the level of the platelet count. In other words, when, as occasionally happens, the bleeding tendency is active in the presence

8. Dalldorf, Gilbert: A Sensitive Test for Subclinical Scurvy in Man, Am. J. Dis. Child. **46:** 794 (Oct.) 1933.

of a normal platelet count or when the tendency is inactive in the presence of thrombocytopenia, the resistance values tend to parallel the former rather than the latter.

In addition, after splenectomy the capillary resistance may be the first measurable entity to be quantitatively affected (chart 1). In seven recent cases of so-called idiopathic thrombocytopenic purpura in which splenectomy was performed, the resistance values rose from 5 to 40 cm. of mercury within the first twenty-four hours after operation (charts 1 and 2). In one case the resistance rose from a preoperative level of minus 10 to minus 20 after the spleen had been removed but before closure of the abdominal wound had been competed. From the first two charts it will be seen further that immediately after splenectomy and at the time resistance rose all clinical bleeding ceased. It is also

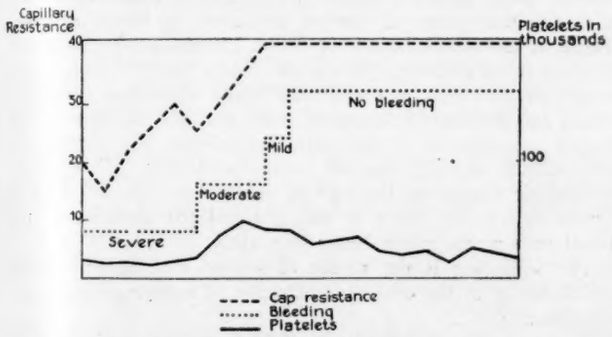

Chart 3.—Clinical course in a case of thrombocytopenic purpura following the administration of pneumococcus antiserum for type I lobar pneumonia. The onset of purpura took place eight days after the first injection of antiserum. Complete cessation of bleeding manifestations occurred nine days later, and the patient was discharged in good health nineteen days after the onset of hemorrhagic symptoms.

of interest that the elevation of the platelet count following operation may lag behind the rise in resistance (chart 1).

Chart 3 depicts the parallelism between the clinical bleeding and the capillary resistance in a person with symptomatic purpura and, in addition, clearly shows the discrepancy which may exist between the platelet level on the one hand and the bleeding tendency and the capillary resistance on the other.

SUMMARY AND CONCLUSIONS

The suction method of measuring capillary resistance is a simple, relatively accurate means of following the frequent fluctuations in the permeability of the capillaries in patients with thrombocytopenic purpura.

The capillary resistance in thrombocytopenic purpura tends to parallel the bleeding tendency rather than the platelet level.

The suction method of measuring capillary resistance is a useful means of estimating the activity of the disease process in patients with thrombocytopenic purpura and may, in certain instances, be of more value in this connection than the platelet count.

In seven cases of idiopathic thrombocytopenic purpura, the capillary resistance rose abruptly during the first twenty-four hours after removal of the spleen and in one instance doubled the preoperative level before closure of the abdominal wound had been completed.

After splenectomy for idiopathic thrombocytopenic purpura, the capillary resistance may be the first measurable entity to be materially affected, the rise in resistance preceding that of the platelets.

630 West One Hundred and Sixty-Eighth Street.

THE INTERPRETATION OF EXCESSIVE GONADOTROPIC HORMONES

EXCRETED IN THE URINE IN EARLY PREGNANCY

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CHICAGO

It has been demonstrated that large quantities of gonadotropic hormones are excreted into the urine when chorionepithelioma or hydatidiform mole is present. It has been shown that up to 50 per cent of the chorionepitheliomas studied have been preceded by hydatidiform moles. It would be advantageous therefore if a diagnosis could be made early by testing the urine for these hormones. It has been contended that if a diagnosis was made before full clinical signs developed, complete eradication of the tumor could be carried out before metastasis occurred. The reports of Leventhal and Saphir,[1] Mathieu and Palmer,[2] Kimbrough[3] and Garber and Young[4] have shown this.

REPORT OF CASE

C. E. S., a white woman, aged 32, a primipara, secundigravida, last menstruated Dec. 30, 1934. Her first pregnancy was terminated by a low forceps delivery after a slight hemorrhage, which was due to a marginal placenta praevia. The second pregnancy was uneventful until June 30, 1935, or about the twenty-sixth week, when it was noted that she was losing weight and had never felt any fetal movements. Examination showed absence of the fetal heart tones, and as the height of the uterus corresponded to that of a twenty weeks pregnancy a diagnosis of missed abortion was made. On July 8 the patient had a profuse hemorrhage, and in a few hours she expelled a hydatidiform mole. Examination disclosed three small fibroid nodules on the posterior wall of the uterus. The uterine cavity was curetted, and the patient made an uneventful recovery and left the hospital in four days. August 7 a Friedman test was negative.

The patient was again seen September 14, at which time the uterus was soft and enlarged, corresponding to the size of a six weeks pregnancy. The patient stated that she had cohabited but once. A condom was used for contraception at that time, which was six weeks prior to this examination and less than one month after the curettage. The Friedman test was now found to be positive. The patient was seen one week later, September 21, and reported that she had had a profuse painless vaginal hemorrhage which had lasted for two hours before stopping spontaneously. The size of the uterus at this time was found to correspond to that of an eight to ten weeks pregnancy. A quantitative determination of the gonadotropic hormones in the urine was made by a slight modification of the original Aschheim-Zondek method (technic described by Leventhal and Saphir[1]). The tests showed that a minimal concentration of the hormone content was estimated to be 150,000 mouse units per liter. In reporting this test, Dr. William Saphir stated that there was a great likelihood of the presence of a chorionepithelioma.

The diagnosis was obscured by the contraceptive precaution. Furthermore, the possibility of a pregnancy occurring within four weeks from the date of the curettement was unlikely. With the uterus growing rapidly for one week, the hemorrhage and the hormone observations, the diagnosis of uterine pregnancy became even more dubious. September 28 the patient was admitted to the Michael Reese Hospital, where the uterus was emptied by an abdominal hysterotomy. It contained a normal fetus and placenta about 10 weeks of age. The left

From the Department of Obstetrics and Gynecology, Michael Reese Hospital.

1. Leventhal, M. L., and Saphir, William: Chorionepithelioma, J. A. M. A. **103**: 668 (Sept. 1) 1934.
2. Mathieu, Albert, and Palmer, Allen: Surg., Gynec. & Obst. **61**: 336 (Sept.) 1935.
3. Kimbrough, R. A., Jr.: Am. J. Obst. & Gynec. **28**: 12 (July) 1934.
4. Garber, Moses, and Young, A. M.: Am. J. Obst. & Gynec. **32**: 321 (Aug.) 1936.

ovary contained a normal corpus luteum of pregnancy. The fibroids were removed and the patient made an uneventful recovery. Microscopic examination of the placenta showed nothing abnormal. Two subsequent Friedman tests were negative.

COMMENT

This case demonstrates the difficulty in diagnosis when, after the expulsion of a hydatid mole, an unexpected pregnancy intervenes. According to Zondek,[5] "Production of gonadotropic principle is greatest at the beginning and in the early months of pregnancy; it diminishes in the latter months (Aschheim and Bernhard Zondek). In early pregnancy the content of this substance amounts to an average of 10,000 mouse units per liter of blood and from 5,000 to 30,000 mouse units per liter of morning urine."

Evans and his associates[6] have recently demonstrated that in the early months of pregnancy the anterior pituitary-like hormones in the urine may reach a high peak. This peak, which is regarded as a normal phenomenon, appeared invariably one month from the beginning of the first expected but missed menstruation. Its level may equal that found in hydatidiform moles and chorionepithelioma. With hyperemesis gravidarum[7] and with toxemias of late pregnancy[8] there is likewise an abnormally large quantity of these substances in the urine.

Reeb, Nerson and Klein[9] reported two cases in which they were erroneously led to believe that they were dealing with hydatidiform moles because of repeated hemorrhages together with a high level of gonadotropic hormones in the urine. When more negative reports, such as this, are made, the diagnostic value of large quantities of gonadotropic hormones in the urine will be more limited.

Cases have been reported in which the hormone content was either negative or present in ordinary quantities, although hydatidiform mole or chorionepithelioma was present in the uterus (Fluhmann,[10] and Cron in discussing Gough's paper[11]). Laboratory test of the hormone content should therefore be interpreted cautiously before a diagnosis is made. The clinical history and physical appearances should be given primary consideration before one concludes that chorionepithelioma or hydatidiform mole is present.

CONCLUSION

The presence of urinary gonadotropic hormones in high concentrations necessitates the definite exclusion of a normal pregnancy before the diagnosis of hydatidiform mole or chorionepithelioma is considered.

185 North Wabash Avenue.

5. Zondek, Bernhard: Gonadotropic Hormone in the Diagnosis of Chorionepithelioma, J. A. M. A. **108:** 607 (Feb. 20) 1937.
6. Evans, H. M.; Kohls, Clara L., and Wonder, D. H.: Gonadotropic Hormone in the Blood and Urine of Early Pregnancy, J. A. M. A. **108:** 287 (Jan. 23) 1937.
7. Schoeneck, F. J.: Am. J. Obst. & Gynec. **32:** 104 (July) 1936.
8. Smith, G. van S., and Smith, Q. W.: Proc. Soc. Exper. Biol. & Med. **30:** 918 (April) 1933.
9. Reeb, Nerson and Klein: Gynéc. et obst. **30:** 305 (Oct.) 1934.
10. Fluhmann, C. F.: Am. J. Obst. & Gynec. **33:** 931 (June) 1937.
11. Gough, J. A.: Am. J. Obst. & Gynec. **34:** 267 (Aug.) 1937.

Conclusive Clinical Proof.—Admittedly conclusive clinical evidence is hard to come by, since controls are seldom possible, but we are too apt to accept such evidence as is pleasing to our prejudices. That is the basis common to both these prevalent weaknesses—obstinate conservatism on the one hand, credulity on the other. If a new idea can be fitted into the authoritarian framework we are too apt to accept it uncritically, whereas if it breaks new ground we are too likely to reject it.—Langdon-Brown, Walter: The Dead Hand in Medical Science, *Lancet* **1:**279 (Jan. 29) 1938.

Clinical Notes, Suggestions and New Instruments

ORTHOSTATIC HYPOTENSION: REPORT OF A CASE TREATED WITH NEOSYNEPHRIN HYDROCHLORIDE

GEORGE D. CAPACCIO, M.D., AND CHARLES J. DONALD, M.D.
SEATTLE

Orthostatic hypotension as an entity has been brought to the attention of the clinician chiefly since the report of Bradbury and Eggleston[1] in 1925. The condition is thought to be the result of dysfunction of the autonomic nervous system. There is loss of reflex vasoconstriction and reflex acceleration of the cardiac rate, usually associated with the assumption of the erect position. It is characterized chiefly by inability to maintain a blood pressure consistent with normal activity when erect. After the patient assumes the erect position there is a decided drop in both systolic and diastolic blood pressures, with the production of marked weakness or actual syncope. There is associated failure of reflex cardiac acceleration and often deficient sweating. Chew, Allen and Barker,[2] in a recent report of six cases, enumerate additional signs and symptoms as (1) accentuation of symptoms in hot weather, (2) excretion of larger amounts of urine when recumbent, (3) appearance of youthfulness, (4) lowered basal metabolism, (5) evidence of organic change in the central nervous system, (6) loss of sexual desire, (7) pallor of the skin and (8) elevation of the blood urea to the upper limits of normal.

The following is the report of a case that has responded satisfactorily to the oral administration of neosynephrin hydrochloride:

History.—A white woman, aged 56, had always enjoyed good health. In 1932, five years prior to admission, she experienced an attack of colitis, from which she recovered uneventfully. In 1933 she first noticed weakness, blurring of vision and vertigo on assuming an erect position. This gradually became worse, to such a degree that in 1934 she experienced weakness, vertigo and actual syncope on standing. Consciousness was regained about one to one and a half minutes after recumbency, and no ill effects were noted. There had always been an associated hypohidrosis, more noticeable since 1932. In the fall of 1936 she became materially worse, and several months prior to admission she had been placed on a regimen that included adrenal cortex extract, digitalis and thyroid extract, with no material benefit. During these years weakness, blurring of vision and vertigo occurred constantly when the patient was standing up, and for only short periods of time was there freedom from syncope. She learned to walk with the shoulders stooped forward, and on feeling faint she would automatically lower her head without stopping and would feel considerably better. Just prior to admission, in April 1937, she had recovered from several attacks of nausea and vomiting entailing a loss of weight of about 16 pounds (7.3 Kg.).

Examination.—The patient was dark complexioned and well preserved. She appeared chronically tired and to be her stated age. The eyes, nose, throat, teeth, ears and neck were not remarkable. Examination of the heart gave no significant results. The blood pressure was as follows: recumbent 124 systolic, 82 diastolic; sitting 52 systolic, 38 diastolic, and unobtainable, with syncope, on standing. There was an immediate return of consciousness with recumbency. The peripheral vessels were not remarkable. The lungs were clear and the remainder of the physical examination, including a neurologic survey, showed no manifestations of significance.

Examination of the blood revealed hemoglobin 105 per cent, 14.4 Gm., erythrocytes 5,090,000, leukocytes 8,800, differential

From the Mason Clinic.
Frederick Stearns & Co. supplied the neosynephrin hydrochloride for clinical trial.

1. Bradbury, S., and Eggleston, Cary: Postural Hypotension: Report of Three Cases, Am. Heart J. **1:** 73-86 (Oct.) 1925.
2. Chew, E. M.; Allen, E. V., and Barker, N. W.: Orthostatic Hypotension: Report of Six Cases and Review of the Literature, Northwest Med. **35:** 297-303 (Aug.) 1936; Proc. Staff Meet., Mayo Clin. **11:** 535-538 (Aug. 19) 1936.

count normal. The urine was negative except for a slight amount of pus. The Wassermann and Kahn reactions were negative.

A diagnosis of orthostatic hypotension was made and efforts were directed toward determining its nature, whether primary or secondary. Further laboratory studies were as follows: Blood urea nitrogen was 14 mg., nonprotein nitrogen 51 mg. per hundred cubic centimeters. The icterus index was 6, the blood chlorides 495 mg. per hundred cubic centimeters, serum protein 6.66 Gm., serum albumin 4.49 Gm. A dextrose tolerance test showed the blood sugar to be 111 mg. per hundred cubic centimeters fasting, 117 mg. at the end of one hour, 90 mg. at the end of two hours, and 76 mg. at the end of three hours, urine sugar being 0 on all tests. The basal metabolic rate was minus 18. A Mantoux test was 1+.

TABLE 1.—*Blood Pressure and Pulse Before Treatment*

Position	Blood Pressure	Pulse	Comment
Recumbent.....	100/64	84	
Sitting.....	52/38	88	
Standing.....	38/? (syncope)	90-98 (cardiac rate)	Blood pressure often unobtainable; pulse imperceptible

Gastric examination showed free acid 0, total acids 4. Histamine was not used.

An x-ray film of the stomach and duodenum was negative. X-ray films of the colon were negative. A film of the gallbladder, taken elsewhere, showed slight impairment of function. A film of the abdomen revealed calcification in the region of the adrenal glands. X-ray examination of the chest, taken elsewhere, showed calcification of the hilar glands. An electrocardiogram was made with the patient both recumbent and sitting. There was evidence of coronary artery disease, with a less prominent Q_4 when sitting.

In spite of x-ray evidence of calcification in the region of the adrenal glands, it was believed that this was a case of orthostatic hypotension of idiopathic origin. The laboratory and clinical picture ruled out Addison's disease as the causative factor.

Before therapy was begun, additional clinical studies were made. Pilocarpine one-sixth grain (0.01 Gm.) was given subcutaneously and there was marked generalized sweating. Atropine $\frac{1}{100}$ grain (0.0006 Gm.) caused no change in blood pressure or pulse rate. Carotid sinus stimulation resulted in no alteration of the pulse rate but caused an elevation of blood pressure of about 10 mm. of mercury in both the recumbent and the sitting position. Response of blood pressure to the cold water test showed no increase. In fact, at the end of immersion in cold water the systolic blood pressure fell 10 mm. and the diastolic 8 mm. of mercury. At the end of two minutes the blood pressure returned to its former level. Representative readings of the blood pressure and pulse before treatment are given in table 1.

Simple flexing of the knees in a sitting position caused the blood pressure to fall 16 mm. of mercury. A sharp fall of blood pressure occurred after eating. Advantage of this observation was taken during treatment in that two main feedings a day were given, with only milk and crackers at noon.

Course.—Administration of a high salt diet supplemented by additional sodium chloride, both in capsules and intravenously, resulted in no improvement.

Ephedrine sulfate was given in gradually increasing doses, attaining a maximum of three-fourths grain (0.05 Gm.) every two hours for six doses. The maximal blood pressure readings obtained in the various positions were as follows: recumbent, 148/104; sitting, 84/64; standing, 38/?, with dizziness after one minute.

This was supplemented by thyroid extract, strychnine and an abdominal binder, with no appreciable benefit.

Benzedrine sulfate was next tried. This was given in doses of 20 mg. at 7 a. m., 10 a. m. and 2 p. m., with no material benefit. This drug was not used in large dosage or for a sufficient period of time to warrant any definite conclusion.

Pitressin was then used hypodermically in doses of 1 cc. subcutaneously. Representative readings forty-five minutes after injection were as follows: recumbent, 170/102; sitting, 160/100; standing, 90/70.

Using this preparation, the patient walked for the first time without weakness, dizziness or syncope. However, she experienced substernal and abdominal distress and pain in the back following its administration. The substance was used four times a day for a reasonable length of time and it was found that the peak blood pressure was reached about forty-five minutes after injection. Its effect was not noticed after an hour and a half. Later it was used in conjunction with ephedrine sulfate. Pitressin was also tried by the nasal route, but no benefit was derived. Since pitressin was inconvenient for the patient to administer to herself and since it was associated with untoward symptoms such as distress in the chest and abdominal discomfort, it was discontinued.

As none of the aforementioned drugs proved entirely satisfactory or practical, neosynephrin hydrochloride was tried. Unfortunately during its early use it was discontinued because of an intercurrent attack of pyelitis with chills and fever. It might be noted that no alteration of blood pressure occurred during the febrile illness. To our knowledge this drug had not been used previously in the treatment of orthostatic hypotension, and the effective dosage could be determined only by trial. It was found that the blood pressure rose to a maximum after about one to one and one-fourth hours and remained at the higher level for a variable period of time. We were able to elevate the blood pressure from a basal of 80/52 in the morning to a maximum of 186/118 at 5 p. m., using 50 mg. of the drug every two hours. Employing this dosage, the patient was able to be up and about almost at will. The blood pressure could be elevated from a basal of 80/50 to a maximum of 192/118, with no untoward side effects. There was no associated palpitation, precordial distress, nervousness or undue apprehension, as had been noted following the administration of ephedrine, benzedrine and pitressin. Except for a feeling of well being, the patient was unaware of an elevation of the blood pressure. The dosage was gradually altered so that on discharge she was taking 30 mg. of neosynephrin every hour from 8 to 4 and she was advised to partake of a diet high in salt, with only a small noonday feeding.

TABLE 2.—*Blood Pressure and Pulse After Medication*

Position	Blood Pressure	Pulse
Recumbent.....	140/90	96
Sitting.....	134/84	96
Standing.....	74/50	88

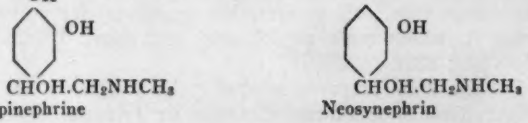
The patient was last seen July 29, 1937, two months after discharge from the hospital. She had reduced the dosage to the following: 20 mg. of neosynephrin at 7:30 a. m., 20 mg. at 9 o'clock and 20 mg. at 12 noon. Blood pressure readings and pulse rates recorded on this date, three hours after medication, are given in table 2.

She had been able to perform all her household duties and partake of three full meals daily. Sweating had become more abundant. Since discharge, two months previously, she had experienced only one fainting spell. For the first time in four years she had been free from weakness and vertigo on standing.

COMMENT

Treatment of idiopathic orthostatic hypotension is largely symptomatic. It is directed toward elevating the blood pressure so that when the erect position is assumed it will be sufficiently high to allow of normal physical activity. Ephedrine and benzedrine sulfate have been the drugs advocated, but in this particular instance they did not prove satisfactory. The vasopressor effect of pitressin is too short lived and is attended by untoward symptoms, which preclude its use. In

searching for a suitable sympathomimetic drug, neosynephrin hydrochloride was used. This is a synthetic drug closely related to epinephrine.



Epinephrine Neosynephrin

It may be given by mouth, subcutaneously, intramuscularly or intravenously. It produces a marked elevation of blood pressure as the result of peripheral vasoconstriction and increased cardiac output (increased stroke-volume output). Carl A. Johnson [3] reports its use parenterally in the treatment of shock and remarks that, unlike epinephrine and ephedrine, it shows no tendency to produce irregular cardiac rhythm. He remarks further that unpleasant symptoms such as nervousness, apprehension and precordial distress attendant on the administration of epinephrine and ephedrine are not noted with neosynephrin hydrochloride. This has been our experience. Thus far no tolerance for the drug has developed. In fact, the dosage has been decreased from 150 mg. to 60 mg. daily.

CONCLUSIONS

Neosynephrin hydrochloride was used successfully in the treatment of a case of idiopathic orthostatic hypotension. Its chief advantage is the absence of untoward symptoms, usually associated with the administration of sympathomimetic drugs.

CARCINOMA OF THE CERVIX OF MICE RECEIVING ESTROGENS

W. U. GARDNER, PH.D.; EDGAR ALLEN, PH.D.; G. M. SMITH, M.D., AND L. C. STRONG, PH.D., NEW HAVEN, CONN.

During the past three years hyperplastic epithelial lesions of the cervix have been observed following the injection of estrogens into mice. Recently a carcinoma of the cervix has been obtained which has grown following transplantation without continuing the administration of estrogen to the host.

Several investigators have observed abnormal epithelial growths of the uterine cervices of mice following the injection of estrogens. Loeb, Burns, Suntzeff and Moskop [1] reported a precancerous lesion in one mouse. Following the application of estrogen and 1:2:5:6-dibenzanthracene, Perry [2] and Perry and Ginzton [3] observed lesions in the cervices of three mice. Localized infiltrating epithelial overgrowths of the cervix were observed in three partially hysterectomized mice and in two mice with intact uteri following estrogen treatment.[4] Recently precancerous or carcinoma-like lesions of the cervix or vagina have been described.[5]

In our laboratory eighteen tumors have been observed in or near the cervices of mice which have received large amounts of estrogens (500 international units of estrone benzoate or estradiol benzoate [6] weekly or every two or three weeks) over extended periods. Most of these growths were not apparent in the living animal. Some of the smaller ones were determined only after sectioning and microscopic study (fig. 1). Although even the smaller hyperplastic growths invaded the adjacent mucosa or muscularis, their continued growth independent of further estrogenic stimulation remained undetermined.

Recently a cervical tumor of large size was obtained in a mouse receiving estrogens and was successfully transplanted into male and female mice of the same inbred strain. It is believed that this experiment affords the first convincing demonstration of a malignant cervical tumor induced by estrogens and indicates that the previously observed epithelial hyperplasias were probably early carcinomas or at least precancerous lesions.

PROTOCOL

A mouse of the C_3H strain received 500 international units of estradiol benzoate every three weeks from an age of 45 to 266 days (a total dose of 5,500 international units). A

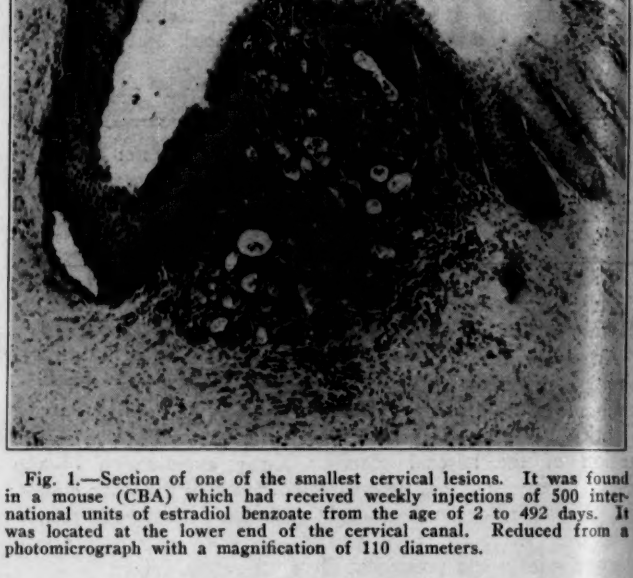


Fig. 1.—Section of one of the smallest cervical lesions. It was found in a mouse (CBA) which had received weekly injections of 500 international units of estradiol benzoate from the age of 2 to 492 days. It was located at the lower end of the cervical canal. Reduced from a photomicrograph with a magnification of 110 diameters.

mammary tumor appeared at the end of this time and was removed. A second mammary tumor developed twenty-four days later and was removed. At this time weekly injections of 500 international units were started and continued for seventy-five days (5,000 international units). At the age of 359 days a marked enlargement of the pelvis was noted. Five days later the tumor protruded from the vagina and the mouse was killed. A large tumor extending from the bifurcation

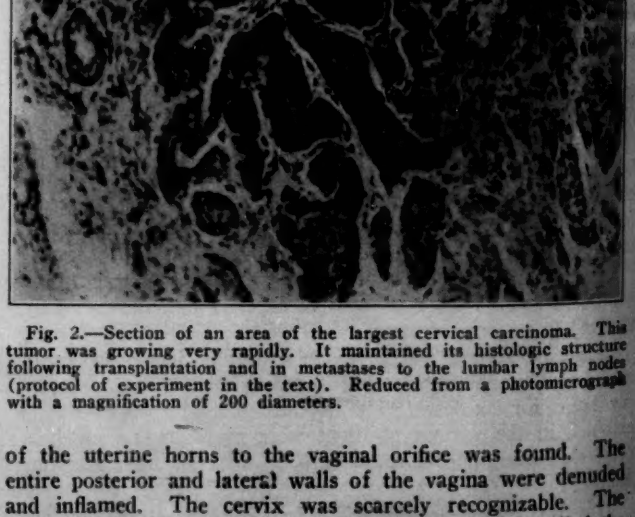


Fig. 2.—Section of an area of the largest cervical carcinoma. This tumor was growing very rapidly. It maintained its histologic structure following transplantation and in metastases to the lumbar lymph nodes (protocol of experiment in the text). Reduced from a photomicrograph with a magnification of 200 diameters.

of the uterine horns to the vaginal orifice was found. The entire posterior and lateral walls of the vagina were denuded and inflamed. The cervix was scarcely recognizable. The tumor completely surrounded the rectum and nearly filled the pelvis. The lymph nodes in the lumbar region were enlarged.

Small pieces were removed from the lateral margin of the tumor and were grafted subcutaneously into one female and

From the Department of Anatomy, Yale University School of Medicine.

This investigation has been supported by grants from the Anna Fuller Fund, International Cancer Research Foundation and the Research Fund of Yale University School of Medicine.

1. Loeb, Leo; Burns, E. L.; Suntzeff, V., and Moskop, Marian: Proc. Soc. Exper. Biol. & Med. **35**: 320 (Nov.) 1936.
2. Perry, Isabella H.: Proc. Soc. Exper. Biol. & Med. **35**: 325 (Nov.) 1936.
3. Perry, Isabella H., and Ginzton, L. L.: Am. J. Cancer **29**: 680 (April) 1937.
4. Gardner, W. U.: Occasional Publications American Association for the Advancement of Science, Supplementary Series **85**: 67, 1937.
5. Suntzeff, V.; Burns, E. L.; Moskop, Marian, and Loeb, Leo: Am. J. Cancer **32**: 256 (Feb.) 1938.
6. The estradiol benzoate (progynon-B) was supplied by the Schering Corporation through the courtesy of Dr. E. Schwenk.

four male mice of the same strain. All the grafts grew and measured 1 cm. or more in diameter in eleven days. At this time one had infiltrated the skin and was removed. The other grafts grew progressively, three invading the skin by the seventeenth day. The tumor is now growing in the second transplant generation.

Although the exact point of origin of this tumor could not be determined on account of its advanced growth, it was

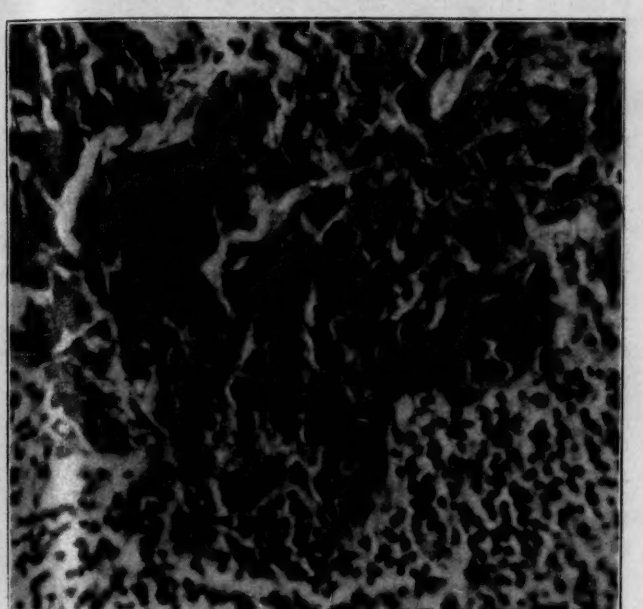


Fig. 3.—Section of a metastasis of the tumor shown in figure 2 in one of the lumbar lymph nodes. Slightly reduced from a photomicrograph with a magnification of 250 diameters.

histologically similar to the smaller tumors observed in the cervical canals or the vaginal fornices of other mice receiving estrogens. This tumor consisted of squamous cells in dense irregular masses or arranged in columns or cords (fig. 2).

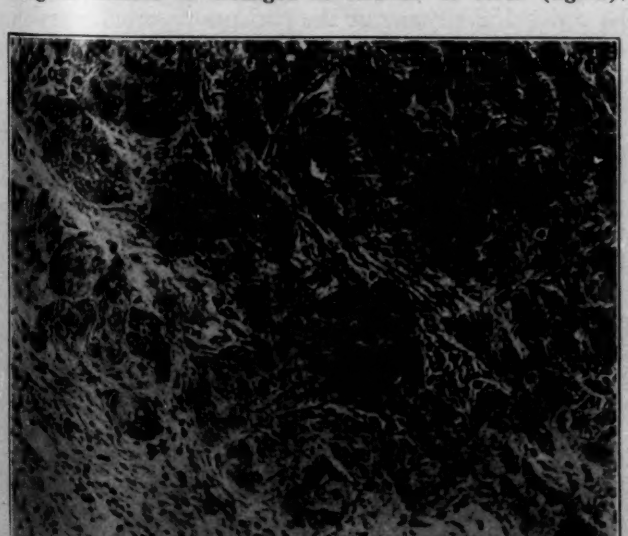


Fig. 4.—Section of a peripheral area of a transplanted tumor removed eleven days after the initial graft had been placed in the axilla. Slightly reduced from a photomicrograph with a magnification of 200 diameters.

The vaginal surface was infiltrated with leukocytes. In places the tumor cells were continuous with the squamous epithelium of the anterior wall of the vagina. The peripheral parts of the tumor were growing rapidly, extending into the muscles of the rectum and invading the neck of the bladder. The growth of the tumor was primarily in the direction of the vulva, as shown by the involvement of the perineum during the five days it was under observation. Metastatic growths were found in the lower abdominal lymph node (fig. 3).

Microscopic study of the excised mammary tumors (one an adenocarcinoma and one an adenocarcinoma of a cystic hemorrhagic type) precludes a metastatic origin of the cervical tumor.

The cervix of the mouse differs greatly in some ways from that of the human being. It contains no glands and is lined by a squamous epithelium. Also unlike the human cervix it shows little tendency to develop spontaneous tumors. We have found no hyperplastic lesions of the cervix in more than 100 old female mice, untreated or receiving injections of sesame oil (solvent for the estrogen). Slye, Holmes and Wells [7] observed only twenty-two uterine tumors among 39,000 mice (examined post mortem), eleven leiomyomas, seven sarcomas, three adenomas and one teratoma. The first seven tumors observed in our laboratory in mice receiving estrogens appeared in a group of forty-three female mice injected. The earlier development of mammary tumors probably decreases the incidence. Most of the mice with the smaller cervical lesions were killed after the mammary tumors developed. The breast tumors are now being removed in order to lengthen the life of the animals and allow time for development of cervical growths.

SUMMARY

A large carcinoma of the cervix uteri with metastases to the lumbar lymph nodes developed in a mouse following the injection of 10,500 international units of estradiol benzoate over a period of 319 days. This tumor was grafted successfully into male and female mice of the same strain and grew rapidly without further estrogen stimulation. Smaller, invading epithelial growths observed in eighteen other mice are probably precancerous growths or early carcinomas.

Special Articles

ELEVEN DEATHS FROM A CANCER TREATMENT

As we go to press, eleven persons in Orlando, Fla., have died, one other is seriously ill, and two others are mildly ill, following the administration to them by physicians of injections of a treatment for cancer, the preparation apparently grossly contaminated with tetanus toxin. The cancer treatment used was Ɽ, series 152, prepared by the Biochemical Research Foundation of the Franklin Institute, Philadelphia, Ellice McDonald, M.D., Director. Dr. McDonald has for some time been interested in the product for cancer called "ensol" and Ɽ, we understand, is a product of the type of "ensol" made with a special substrate of cancer tissue. The "ensol" treatment for cancer was first launched in October 1935 by Dr. Hendry C. Connell of Kingston, Ont. At that time, THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION published a warning.[1] We quote:

This account of the methods pursued by Dr. Connell in promotion of his product reveals procedures more like those of the charlatan than of the scientific investigator. Moreover, his statement of the method of preparation of his product is so incomplete and confused as to make duplication of his work impossible.

The results he claims are similar to those which have been obtained with a half-dozen other methods. In a few cases there are apparently temporary remissions due to damage of the blood vessels in the tumor. The same effects have been produced by Coley's fluid, by various bacterial toxins, by injection of Witte's peptone and by a number of similar foreign proteins. Results just as good occur with the methods used by most of the cancer quacks. There does not appear to be any real evidence that

7. Slye, Maude; Holmes, H. F., and Wells, H. G.: Cancer Research **8**: 96 (April) 1924.

1. The Connell Cancer Cure, editorial, J. A. M. A. **105**: 1122 (Oct. 5) 1935.

an antitumor enzyme is present in this mixture. Notwithstanding these considerations, newspapers have heralded widely Dr. Connell's claims. Great numbers of sufferers from cancer have been stimulated to false hopes. Public officials, university officials, and some Canadian physicians have been led into participation in the promotion of a project which will inevitably bring them grief. The true test of a cancer cure is recovery of the patient and disappearance of the tumor. How many of Dr. Connell's patients with cancer will be alive in five years? Time is the true tester of cancer cures—yet newspapers continue to lead cancer sufferers to promoters of cancer cures that have been tested only a few weeks or months. If Dr. Connell really realized his responsibility he would have waited to inform the newspapers until he knew whether or not his "discovery" actually had merit. Faith may move mountains but it is yet to be shown that it will cure cancer, even when given in the form of something called "Ensol."

Since 1935 the record of the development of the Connell treatment of cancer has not been inspiring. Researches made on cancer in mice have invariably resulted in failure to demonstrate any value to the method. In August 1936 a bulletin was issued indicating that the Hendry Connell Research Foundation had become affiliated in November 1935 with the Biochemical Research Foundation of the Franklin Institute of Philadelphia. It contains reports of cases treated with "ensol," most of which had been under treatment so short a time that judgment as to the value of the treatment is impossible. In one statement it is said that "382 cases were treated, with a death rate of 47 per cent." The statement is also made that "53 per cent of hopeless and abandoned cases are now alive." Although the period of treatment in most of them was not even one year, it is argued that "ensol does influence the course by partial or complete arrest in cases of advanced cancer."

In October 1936 Dr. Charles Phillips[2] published in the *Texas State Journal of Medicine* a report of a visit he had made to Kingston. Here he describes the manufacture of "ensol" as follows:

> Bacillus histolyticus is a relatively harmless germ, elaborating during its growth an active enzyme which, if it were allowed to act upon protein material at body temperature, would more or less completely dissolve it by enzyme action. By trial, it was found that this germ would autolyze cancer as any other protein, and then the crux of the whole plan was reached when it was believed that the resulting enzyme solution, if given in suitable dose to a suitable cancer patient, would cause regression of that cancer selectively. In this way, the general rules about tissue specificity and immunology were followed. When the program was finally worked out, it called for careful laboratory handling of the germs inoculated onto pieces of cancer removed from a fresh cancer and finally for giving the autogenous solution, now called Ensol, to the patient from whom the piece of cancer was excised. I saw racks of tubes, in the incubator, which had been inoculated for seventy-two hours with Bacillus histolyticus. The fluid was filtered through Berkefeld filters and held for about twelve hours for clarity as sterility control, the liquid tubed and labeled with Ensol batch number and date, and this was then ready for injection into the patient. Both the autogenous Ensol and stock Ensol made from any fresh available carcinoma material were tried, but before long it was found too difficult to stick closely to the autogenous method. Thus, gradually, a certain amount of specificity was lost. The reputation of the new treatment brought numbers of cancer cases to Kingston, and so there was no actual dearth of fresh material. Aseptic technic was used throughout the removal of the tissue and its laboratory development into Ensol, but I found a poorly equipped place for work and a number of potential breaks in straight bacteriologic technic under the supervision of a relatively inexperienced assistant technician. He appeared to me to be doing the best he could under difficulties of being temporarily housed in the basement of the physics building of Queen's University.

In October 1936 letters became available in the headquarters office of the American Medical Association indicating that Dr. Ellice McDonald was doing his utmost to promote the "ensol" method, endeavoring to establish in Chicago an office to which patients could be referred and offering, indeed, to pay the expenses of a physician to spend two months in Kingston and then to become established in Chicago. He said "It looks as if we could refer you enough patients to make it well worth your while." In another letter he said:

> I am sure in the past four months I could have sent twenty such patients who will require at least one hundred injections each, if you had knowledge of the treatment and had had direct experience in its use. You could carry on this treatment as well as your own practice. If it got to be too much for you to handle, you could easily impress an assistant, and I am inclined to think in the near future, when this treatment really gets going, it could be made quite a real practice and also a reasonably remumerative one. We would like to have some doctor in Chicago who had knowledge of the treatment and who is able to give first hand advice in consultation with the other Chicago doctors who are using it. We could control much for you by making you more or less a central dispensary for the distribution of ensol. We cannot make you the sole distributor, but we could wangle it around so that most men would have to come to you in consultation.

Apparently since 1936 the Hendry Connell Research Foundation of Kingston and the Biochemical Research Foundation of the Franklin Institute have been able to secure physicians in various portions of the United States to act as distributing agents and experimenters with "ensol."

On Friday, March 25, Dr. T. A. Neal of Orlando, Fla., who has for some time been using "ensol" in his practice, treated his patients with the product called ℞, series 152. Some of the patients reported reaction in the form of a sore arm on March 26. On March 27, many became ill. By March 28 all were seriously ill with symptoms identical with those of tetanus. By March 31 seven had died, four were seriously ill and two were expected to die. Postmortem examination revealed cerebral edema and changes in the viscera. Up to March 31, tests had been made with the product called "ensol." At that time Dr. Neal, who had naturally been extremely disturbed about the matter, pointed out that he had used also the product called ℞, series 152. A vial of this preparation was injected into three guinea pigs, and three others were injected with "ensol." The three guinea pigs injected with ℞, series 152, died and the three with "ensol" did not die.

Immediately on receiving the news of this event by long distance telephone from Orlando, Fla., the headquarters of the American Medical Association notified the Food and Drug Administration and the National Health Institute in Washington, D. C. Both organizations immediately sent investigators to Orlando, Fla., to Kingston, Ont., and to Philadelphia. Dr. H. A. Day of Orlando, president of the Orange County Medical Society, who has been active in the investigation, now writes that on April 1 one patient who had been taking this treatment came in bringing with her a vial of ℞, series 152. This patient had developed symptoms of tetanus. According to her statement, she had received two doses of ℞, series 152, one on March 29 and one on March 30. All specimens of ℞, series 152, were obtained and studied. Part of the material was shipped to Washington. The evidence, as we go

2. Phillips, Charles: Connell Cancer Treatment: Its Present Status, Texas State J. Med. 32: 406 (Oct.) 1936.

to press, indicates that all the animals receiving only ℞, series 152, dated March 7, died of tetanus. The other animals injected at the same time with ℞, series 152, and with large doses of tetanus antitoxin did not die. It is now announced also that Ellice McDonald, director of the Biochemical Research Foundation, claims that the bacterial filtrate has no contamination. Nevertheless, all of the material under investigation has been recalled and the names of physicians of the United States who are using the product have been turned over to government agencies. Moreover, C. G. Power, health minister of Ontario, has forbidden all distribution of "ensol" until the investigations now under way are completed. The conclusion is inevitable that the product called ℞, series 152, which is alleged by the Biochemical Research Foundation of the Franklin Institute of Philadelphia to be a type of "ensol," is the product which contained sufficient tetanus toxin to kill those in whom it was injected. Appreciation is due to physicians of Orange County, Fla., for their prompt action in exposing this matter and for their activity in determining all the facts as soon as possible. The investigations by the United States Public Health Service and the Food and Drug Administration are proceeding in an endeavor to fix the responsibility for this tragedy.

ROCKY MOUNTAIN SPOTTED FEVER

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HAMILTON, MONT.

The rickettsioses of man include a number of tick, louse, flea and mite borne diseases caused by infectious agents termed rickettsiae, the known characteristics of which suggest that they may be a group of microorganisms intermediate between bacteria and filtrable viruses. The literature and the classification of these rickettsial diseases have been and still are in a somewhat chaotic condition, owing, on the one hand, to the fact that an unavoidable lack of knowledge of the identity of the diseases observed has frequently necessitated that they be referred to by local or other equally unfortunate designations and, on the other, to premature attempts to classify them on the basis of geographic occurrence or with regard to the nature of their respective insect or arachnid vectors. Some semblance of order is now becoming apparent, however, as the result of more recent and more logical efforts to segregate them by the more significant criteria afforded by combined epidemiologic, pathologic and serologic data. On this basis three groups seem quite definitely established—the typhus group, the Rocky Mountain spotted fever group and the Japanese river fever group. Several are still unassociated. The typhus group consists of historic louse-borne typhus and endemic flea-borne typhus, but the question of whether they are caused by the same virus as altered by passage through different vectors is still unsettled. The Rocky Mountain spotted fever group includes the following tick-transmitted diseases: Rocky Mountain spotted fever of North America, São Paulo exanthematic typhus of Brazil and boutonneuse fever of southern Europe and northern Africa. Here again one finds uncertainty as to how nearly identical they should be considered. The Japanese river fever group consists of several more or less closely related mite-borne infections of southern Asia, Japan, Formosa and Oceania.

The two rickettsioses in which North Americans are interested are endemic typhus and Rocky Mountain spotted fever. The latter is the more widely distributed and the more important economically and is the subject of this paper. The data offered will be presented under four sectional headings: (1) ticks concerned in the maintenance and transmission of the virus, (2) the virus and the disease in nature, (3) the disease in man and (4) prophylaxis.

TICKS CONCERNED IN THE MAINTENANCE AND THE TRANSMISSION OF THE VIRUS

Three ticks are proved transmitting agents of the virus of Rocky Mountain spotted fever: the Rocky Mountain wood tick, Dermacentor andersoni; the American dog tick, D. variabilis, and the rabbit tick, Haemaphysalis leporis-palustris. All three of these ticks occur in both the United States and Canada, while variabilis extends southward into Mexico and the rabbit tick into Central and South America.

The Rocky Mountain wood tick is found throughout the Rocky Mountain region and adjacent areas, extending into the eastern portions of the Pacific Coast states and into western North and South Dakota and Nebraska. It is abundant in southeastern British Columbia and occurs in parts of southern Alberta and at least southwestern Saskatchewan. The larval and nymphal stages engorge on a great variety of rodents and certain of the smaller carnivores, most of which are susceptible to spotted fever. The adults infest mainly large animals, wild and domestic, but occur to some extent on small animals, particularly jack-rabbits and porcupines. The larvae are active during the summer, the nymphs and adults during the spring and early summer. In the higher altitudes all stages may occur somewhat later in the season. The life cycle of the Rocky Mountain wood tick is normally completed in two years. The adults bite man freely, and the nymphs occasionally attach to children.

The American dog tick is widely distributed throughout the Central and Eastern states and is fairly numerous in many sections. East of the Rocky Mountain region it overlaps the eastern limit of the Rocky Mountain wood tick. On the Pacific Coast it is found in western California and occasionally in southwestern Oregon. In Canada it occurs eastward from southern Manitoba and has been reported in Labrador. Information concerning the biology of this species is relatively sketchy compared to our knowledge of the Rocky Mountain wood tick. The early stages, like those of the latter tick, feed on rodents, but apparently on a much smaller range of species. Some species of mice are recognized to be important hosts. The common name of this tick results from the prevalence of the adult stage on dogs. However, this stage is common on deer and is also found on the larger domestic animals, especially cattle, and even, to some extent, on the smaller wild animals. Data concerning the seasonal occurrence of the immature stages are incomplete. The nymphs apparently engorge over a period of some months and have been found feeding even during the winter. The adults appear later in the spring and remain active later into the summer than do those of the Rocky Mountain wood tick. This tick also bites man freely.

From the Rocky Mountain Laboratory of the National Institute of Health.
Read before the first Rocky Mountain Medical Conference, Denver, July 21, 1937.

The rabbit tick has the widest distribution of any of the three species mentioned. It occurs essentially throughout the United States, extending southward into South America and northward into central Alaska and into Canada at least as far as the southern end of Hudson Bay. All three stages are limited to various species of rabbits (some of which are more heavily infested than others) and to certain ground-frequenting birds, especially certain game birds. In the northern part of the United States it is prevalent from early spring until early fall. In the South its seasonal occurrence is considerably extended. When conditions are favorable, its life cycle is completed in one year. It occurs on man only rarely. In contradistinction to the two ticks just discussed, it carries consistently a very mild strain of spotted fever virus.

There are five other species of ticks in the United States that are potential transmitting agents. Under laboratory conditions they have been demonstrated to be fully as efficient vectors as the proved carriers. It seems probable that two of these ticks, D. occidentalis, the Pacific Coast tick, of California and Oregon, and Amblyomma americanum, of the South Central and the Southeastern states, are actual natural carriers. This has not been proved, but there is suggestive evidence. The latter species has been reported from as far north as southern Manitoba. The other three species are Amblyomma cajennense, which occurs in the southern tips of Texas and Florida and is the known transmitting agent of São Paulo exanthematic typhus, a disease prevalent in the vicinity of São Paulo, Brazil, which is immunologically identical with Rocky Mountain spotted fever; Rhipicephalus sanguineus, the brown dog tick, which is abundant along the Gulf Coast and occurs northward sporadically as far as Minneapolis and westward to Phoenix and is a known carrier of boutanneuse fever in southern Europe and northern Africa, and, finally, D. parumapertus, which occurs on rabbits in the southern Rocky Mountain region and along the Pacific Coast northward into Oregon. The host relationships of all these five species are such that any tick not already carrying infection is likely to do so sooner or later.

Three of these species frequently bite human beings, and, of the other two, the brown dog tick does so commonly in Europe and Africa but is little known as a parasite of man in North America, while D. parumapertus bites man but rarely and can be concerned only as a possible infection-carrier in nature.

THE VIRUS AND THE DISEASE IN NATURE

Most studies concerning the virus and spotted fever in nature have been made in relation to the Rocky Mountain wood tick, and the statements which follow refer to this tick unless otherwise stated.

The actual mechanism by which the virus is maintained and perpetuated in nature has not been definitely demonstrated. The three following sets of factors are evidently concerned, but their relative importance is not clear:

1. *Stage to Stage and Generation to Generation Transmission of the Virus in Ticks.*—In the case of the three proved tick carriers, infection acquired by larvae or nymphs is passed on to the adult stage and from a certain percentage of infected females it is passed on through the eggs to the larvae of the next generation. Also infected male ticks may infect females during impregnation. It may be that this mechanism is all that is necessary to assure continuity of the virus in nature, although theoretically it can be shown that this is unlikely.

2. *Stage to Stage Transmission of the Virus in Ticks Plus the Starting of New Lines of Tick Infection Each Year by the Simultaneous Feeding of Infected and Noninfected Ticks on a Susceptible Host.*—When infected larval, nymphal or adult ticks feed on susceptible hosts, the last named presumably become infected, and noninfected ticks which engorge on these hosts during the infectious period may acquire the virus. The following season the next succeeding stage of the tick may in turn infect its host and through it still other ticks. New lines of tick infection can thus be started each year. It was formerly supposed that only larvae and nymphs would normally function in this manner, but now that adult-tick hosts such as dogs and sheep are known to be mildly susceptible, it is apparent that the male and the female ticks may also have a part. This seems particularly likely in the case of the American dog tick.

3. *The Occurrence of Spotted Fever Virus in the Rabbit Tick.*—As previously mentioned, the rabbit tick, in contradistinction to the Rocky Mountain wood tick and the American dog tick, consistently carries an extremely mild type of the virus. When virus-carrying rabbit ticks are tested by means of laboratory animals, the resulting infection is usually inapparent; that is, it is so low grade that the animal becomes immunized without any febrile reaction. Sometimes there are mild symptoms. The relationship of this tick to the spotted fever problem, particularly to the maintenance and perpetuation of the virus in nature, offers an intriguing field for study. It has the widest geographic distribution of the three proved carriers, and spotted fever virus has been demonstrated in it far north of any known occurrence of Rocky Mountain spotted fever in man and far beyond the northern distributional limits of the other two carriers. It is evident therefore that the virus can persist in the rabbit tick independently of the Rocky Mountain wood tick or the American dog tick. But is infection in the last-named ticks independent of infection in the rabbit tick? The answer to this question is less apparent. The Rocky Mountain wood tick and the rabbit tick meet on rabbits. A rabbit therefore is a medium through which infection can apparently be passed back and forth between these two species of ticks. The extent to which D. variabilis infests rabbits is unknown. Some species of rabbits average from a few hundred to several thousand rabbit ticks per individual, depending on the part of North America concerned.

The percentage of ticks that carry infectious virus has been studied mainly in the Rocky Mountain wood tick and is different in different localities and from year to year even in the same locality. It is frequently less than 1 per cent and rarely exceeds 5 per cent, although in small, localized areas as high as 11 per cent has been demonstrated. Local tick populations which have shown 3 per cent to be infectious one year have the next year failed to show evidence of a single infected tick. In the case of the rabbit tick as studied in Minnesota, Dr. R. G. Green of the University of Minnesota Medical School and I have been able to show infection in between 3 and 4 per cent.

The maximum level of virulence of spotted fever virus varies in different foci in which the disease is endemic, but in most areas it remains reasonably con-

stant from year to year. In some of these foci the maximum level is high and causes a correspondingly high mortality in laboratory animals or in man; in others it is low and inapparent infections are produced consistently. In most areas it is intermediate.

The virus in any individual Rocky Mountain wood tick of a local tick population may range in virulence from a nonimmunizing, nondemonstrable phase to one of the prevailing maximum local virulence. This is doubtless true also of the virus in certain of the other proved and potential tick carriers. The phase present at any particular time depends on the season of the year and how recently the tick may have ingested blood. In a fasting, hibernating Rocky Mountain wood tick or one just emerging from hibernation, the virus is usually either completely inactive or in a phase which causes inapparent infections when injected into laboratory animals. However, if such a tick is incubated or is allowed to ingest blood, the virus becomes "reactivated" and soon reaches its maximum potential virulence.

At this point it is worth while to consider the question of whether or not the occurrence of Rocky Mountain spotted fever in the Central and Eastern states has been the result of a natural spread or of transportation of the virus from the Rocky Mountain region. While it is now recognized that an intensive spread of both the tick and the virus has been in progress within the range of the Rocky Mountain wood tick ever since settlement of the West was begun, yet there is no evidence of any consequential outward expansion of the range of this tick or of the area within which it is the agent of the transmission of spotted fever. Nor are there any data which suggest that transportation of the tick by stock or other animals shipped from the Rocky Mountain region has ever resulted in establishing in nature either this tick or the virus of spotted fever at any point in any of the twenty-four Central and Eastern states in which Rocky Mountain spotted fever has been reported since 1930. If the virus of this disease as met with in D. variabilis was derived from the ticks of the Rocky Mountain region, it would seem probable that a clearly marked trail would have been left along the railroad lines over which stock has been shipped eastward for many years. This is not the case, however. It is also odd that, under such circumstances, Rocky Mountain spotted fever should be most prevalent in the eastern portion of the D. variabilis range rather than the western. Other considerations relating to the biology of both andersoni and variabilis are concerned also but are too lengthy to discuss.

On the other hand, it is now recognized as probable that spotted fever infections have been occurring in some of the far Eastern states for at least thirty years, and it seems not at all impossible or improbable that the virus of this disease has been endemic in the Eastern and the Central states fully as long as in those farther west.

In connection with spread, it is worth noting that fully as high a percentage of spotted fever-infected rabbit ticks is met with among those taken from birds as among those collected from rabbits, and since birds of the species involved move about considerably within at least limited areas, it may be readily comprehended that this tick and its bird hosts form an excellent means for intensive local distribution of the virus and possibly in some instances for its transportation over longer distances.

THE DISEASE IN MAN

In the United States, Rocky Mountain spotted fever is endemic in at least thirty-nine of the forty-eight states. It has been known to be present for many years in all eleven of the Rocky Mountain and Pacific Coast states and more recently in North and South Dakota, and since 1931 it has been reported from twenty-six of the Central and Eastern states. It is most prevalent in the northern Rocky Mountain region and adjacent areas and in parts of North Carolina, Virginia and Maryland. It is likely endemic also in at least some of the Central and Eastern states from which it has not yet been reported.

The greatest number of cases occur in groups of the population engaged in some outdoor occupation or pursuit, principally agriculture. Persons living in range areas, particularly those handling sheep, are in the greatest danger. Other groups affected include hunters and trappers, prospectors and miners, forest service personnel, survey crews, highway construction workers, section hands on railroads, and those who only occasionally visit infected areas for business reasons or as fishermen, picnickers, campers and tourists. In the West only a small percentage of cases occur in city dwellers. This percentage is somewhat higher in some parts of the East. A few cases have been known even in persons who had been confined to bed for weeks. In such instances infected ticks have been brought into the city or home by some intermediary person or animal.

Age and sex incidence depend both on occupation and on whether families live actually within, or only adjacent to, tick-infested areas. In the sagebrush desert regions of the western part of the United States most infections are contracted by men, because of occupational hazards. When families live within infected areas, however, a much higher percentage of cases occurs in women and children. The considerable percentage of cases in women and children in the eastern part of the United States is probably due in part to the fact that the eastern transmitting agent, the American dog tick, infests the dog, a household animal. The Rocky Mountain wood tick is found on dogs far less frequently.

In the West, most of the cases occur during the spring and early summer and the greatest number in April and May, the season of prevalence of the Rocky Mountain wood tick. In sections of higher altitudes (Wyoming, for example), however, the danger season extends further into the summer. Occasional cases have been reported during the late summer, fall and winter months. Persons with fall and winter infections have usually become infected in mountainous areas. In the East, most cases occur in the summer, the season of greatest activity of the American dog tick.

Annual incidence varies and is influenced markedly by meteorologic factors that affect the duration and the intensity of tick activity. Sometimes there is a complete absence for a series of years of cases within a locality in which the disease is endemic. In the Rocky Mountain region the trend of prevalence over considerable periods has been and continues to be more or less definitely associated with conditions incident to settlement and the subsequent type of local agricultural development. In some sections the activities incident to settlement, such as the clearing and bringing under cultivation of large areas of timber or of sagebrush, have created, temporarily or even for considerable periods, the very conditions essential for an

increasing prevalence of both ticks and spotted fever. The ultimate trend of local prevalence, however, is dependent on the type and extent of permanent agricultural development. In areas where agriculture has become intensive, prevalence has decreased, while in those where it has remained extensive, particularly in range country, it has usually continued about the same and in some instances has increased. The best example of decreasing prevalence is in the Snake River Valley of southern Idaho, where there were formerly several hundred cases a year and are now less than fifty. The outstanding example of increasing prevalence is eastern Montana, where spotted fever was rare before 1914 but has since been gradually increasing. There were over 100 cases in 1935. This increasing prevalence has been due at least partly to the progressively more intensive distribution of the tick vector, a natural result of the activities of development. Ticks are now numerous in parts of eastern Montana where they were unknown twenty years ago.

The virulence of the infection in man varies with locality and in any selected area is correlated with the maximum level of virulence of the virus strains in the local tick population. Thus, in most foci the case fatality rate remains reasonably constant. In the Bitterroot Valley section of western Montana, the death rate for adults averages about 80 per cent and for children is 37.5 per cent. A high case fatality rate, however, is not confined to the Bitterroot Valley, as is so commonly believed, but prevails in other parts of western Montana, in certain localities in Wyoming and Oregon, in all affected portions of northern Idaho and along the extreme eastern edge of Washington. In other foci the case fatality rate varies to a minimum of at least 10 per cent. In a few areas it appears to be gradually increasing. Southern Idaho again affords a good example. In former years, when cases were more numerous, the death rate was estimated to be about 5 per cent. At the present time, with fewer cases, the rate is from 25 to 35 per cent.

To the best of present information, spotted fever infections are acquired only through the medium of ticks, usually by tick bite. There is no characteristic lesion at the site of tick attachment, and not infrequently the site of the bite cannot be found. If a lesion not due to irritation is present it is likely the result of secondary infection or some tick-borne agent other than the spotted fever rickettsia. Occasionally there is an enlargement of the regional lymph nodes draining the area. Some few infections are probably contracted through the skin by contamination of the body surface with tissues of infected ticks. This contamination may occur as a result of hand picking ticks from domestic animals.

In a previous section I have referred to the phenomenon of "reactivation." This bears an important relationship to the transmission of infection to man. The virus contained in a tick which attaches in the early spring does not usually become frankly infectious for eight hours or longer after attachment; i. e., until the virus has been "reactivated." Later in the season, however, "reactivation" has been at least partially accomplished by the prevailing warmer temperatures, and infection apparently may occur more quickly. Were virus "reactivation" not necessary, there would be many more infections. I have known infected ticks to feed for as long as three days without transmitting the virus.

(To be continued)

RIBOFLAVIN

PHYSIOLOGY AND PATHOLOGY

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This article and others recently published or to be published comprise a new series on the present status of our knowledge of the vitamins. They have been prepared under the general auspices of the Council on Pharmacy and Chemistry and the Council on Foods. The opinions expressed are those of the authors and not necessarily the opinions of either council. The articles will be published later in book form.—ED.

In the course of their studies on pellagra Goldberger and Lillie [1] used rats as experimental animals, and produced a characteristic deficiency disease. Ophthalmia and bilaterally symmetrical denuded areas were the most important symptoms, and these are still the most common and most characteristic. Goldberger and Lillie reported that "some of the animals have developed a dermatitis at one or more of the following sites: ears, front of neck and upper part of chest, forearms, backs of forepaws, shins, and the backs of the hind paws." Other workers [2] also observed the more severe symptoms but they are comparatively infrequent. Goldberger's description was reviewed by Sure,[3] so additional details will be omitted. The agent that prevents the lesions was designated by Goldberger as the P-P (pellagra-preventive) factor. American biochemists designated the new vitamin as G, the British workers called it vitamin B_2. Goldberger made a very important contribution, but, as is now known, most of the symptoms of the rat disease he described are prevented by riboflavin. This substance does not prevent pellagra, so the two diseases are not analogous.

Goldberger and Lillie did not report the incidence of the symptoms due to a lack of their P-P factor, but other workers have encountered the most extreme variability. Some workers report no symptoms except failure to grow. Others produce them readily in one trial and have difficulty in another.[4] Roscoe [4] reported that of 191 rats deprived of vitamin B_2, a little less than 57 per cent developed dermatitis in an average period of ten weeks. For some years these inconsistencies were puzzling, and it was not possible to eliminate them until the technic was further improved. Hogan and Hunter [5] had announced that the new factor vitamin G is destroyed by ultraviolet irradiation. It eventually developed that this irradiation not only destroyed vitamin G (or riboflavin in the more recent terminology) but also destroyed another vitamin which had not been recognized at that time. Since the symptoms of these two deficiencies sometimes have a superficial resemblance, neither could be sharply defined until both were more or less fully understood.

1. Goldberger, Joseph, and Lillie, R. D.: A Note on an Experimental Pellagra-like Condition in the Albino Rat, Pub. Health Rep. **41**: 1025 (May 28) 1926.

2. Richardson, L. R., and Hogan, A. G.: Skin Lesions of the Rat Associated with the Vitamin B Complex, Research Bull. 241, Missouri Agric. Exper. Sta., 1936.

3. Sure, Barnett: The Present Status of Vitamin B_2 (G), J. A. M. A. **99**: 26 (July 2) 1932.

4. Chick, Harriette, and Roscoe, Margaret H.: Dual Nature of Water-Soluble Vitamin B.: II. Effect upon Young Rats of Vitamin B_2 Deficiency and a Method for the Biological Assay of Vitamin B_2, Biochem. J. **22**: 790, 1928. Roscoe, Margaret H.: Note on the Incidence of Dermatitis Among Rats Deprived of Vitamin B_2, Biochem. J. **27**: 1533 (No. 5) 1933.

5. Hogan, A. G., and Hunter, J. E.: The Plural Nature of Vitamin B, J. Biol. Chem. **78**: 433 (July) 1928.

The technic of Hogan and Hunter was modified [6] in certain respects, and when the modified procedure was used a characteristic dermatitis developed in every experimental animal that survived the depletion period. These lesions have only a superficial resemblance to those described by the previously mentioned workers, and since they did not appear when the rations contained corn starch it was suggested that there are several types of dermatitis, each due to a different deficiency. This suggestion was soon corroborated.[7] The experimental procedure not only demonstrated that there are two different types of lesions, each the result of a different deficiency disease, but it made it possible to produce either, consistently, and with an incidence of practically 100 per cent. It has been suggested [8] that in conformity with the American system of nomenclature the new vitamin be designated as H. It is B_6 in the British terminology. Since the term vitamin G as first used included at least two vitamins, there is no agreement as to what its precise meaning should be now. Evidence obtained with the rat shows that the old vitamin B complex contains vitamin B (B_1), riboflavin and H (B_6); there is no doubt that at least one more must be added [2] and several more have been suggested.

The ration of Richardson and Hogan proved to be well adapted also for studies on riboflavin deficiencies. Unpublished data show that 155 rats were on rations deficient in this substance long enough for the characteristic denuding symptoms to develop. Of these, 136, or 95 per cent, became denuded in periods ranging from six to twenty-four weeks. Some of the remaining 5 per cent were used for other purposes during that period; so with the technic now available practically every rat that survives long enough will develop the typical symptoms.

IDENTITY OF VITAMIN G (B_2) AND RIBOFLAVIN

To digress for a moment, Blyth [9] had demonstrated the presence in milk of a pigment which he called lactochrome. In more recent years several groups of workers became interested in this substance, and more or less concentrated preparations were obtained [10] from milk, liver, heart, kidney, muscles, egg white and yeast. Since the pigment was first isolated in crystalline form [11] from milk, it was designated as lactoflavin, but it is more commonly known as riboflavin in the United States. This substance is yellow, with a characteristic green fluorescence.

Kuhn and his collaborators were interested in vitamin G (B_2), and early in their work they observed a parallelism between vitamin B_2 activity and the intensity of the yellow color and green fluorescence. Both the vitamin and the pigment were destroyed on exposure to light, so it was assumed that they were identical, and this assumption was confirmed.[12] Of the various animal tissues examined, liver and kidney contain the largest amount. One unit is contained in from 0.2 to 0.4 Gm. of fresh weight of liver and kidney and in 0.5 Gm. of ox heart. The heart muscle contains about five times as much of the vitamin as does striated muscle. Their unit is from 8 to 10 micrograms of riboflavin, the amount that permits a gain by a rat of 40 Gm. in thirty days. Edgar and her collaborators [13] report that approximately 40 micrograms daily is required for optimum growth.

György and his collaborators observed that if liver or yeast is extracted in the cold a small portion of vitamin B_2 will dialyze, but that if the extracting fluid is heated then it all dialyzes readily. Evidently some of the vitamin is free and the remainder is bound to a carrier of high molecular weight. This is also true of riboflavin; some is free and some is bound to a colloidal carrier, so the pigment is probably both an enzyme and a vitamin. When the union is broken the enzymic properties are lost, but the vitamin effect remains.

Karrer, Salomon and Schöpp [14] determined the free flavin in liver; also the amount that is combined. One determination showed 76 per cent, another 53.5 per cent, in high molecular weight combination. In cow's milk about 90 per cent of the total amount is free, but Ellinger and Koschara [15] reported that in human milk the pigment is attached to a colloidal carrier, probably albumin.

More recently Karrer [16] and Kuhn [17] almost simultaneously accomplished the synthesis of riboflavin, and György [18] showed that the biologic activity of the synthetic product is identical with that of the naturally occurring form. Its activity is the same, whether administered orally or intraperitoneally.[19]

RIBOFLAVIN AND CELL RESPIRATION

Various physiologic rôles have been ascribed to riboflavin, but the only one concerning which there is no dispute is that it has some function in the oxidation processes of the cell. Our knowledge of these reactions is chiefly due to Warburg and Christian. It is impossible in this paper to give an adequate review of their researches, but they [20] isolated a yellow oxidation enzyme from bottom yeast, which was of a new type, as shown by the fact that it is not inhibited by carbon monoxide or by hydrocyanic acid. The active group of the enzyme, the pigment portion, is bound to protein and is easily detached.[21] This protein-free pigment is yellow, with a green fluorescence, and according to Warburg and Christian it has no enzymic activity.

6. Hogan, A. G., and Richardson, L. R.: The Effect of Ultra-Violet Rays on the Dermatitis Preventing Vitamin, Research Bull. 178, Missouri Agric. Exper. Sta., 1932.

7. Hogan, A. G., and Richardson, L. R.: Effect of Ultraviolet Irradiation on the Vitamin B Complex, J. Biol. Chem. **100**: lv (May) 1933; Irradiated Vitamin B Complex and Dermatitis, J. Nutrition **8**: 385 (Oct.) 1934. György, Paul: Vitamin B_2 and the Pellagra-like Dermatitis in Rats, Nature **133**: 498, 1934. Chick, Harriette; Copping, Alice M., and Edgar, Constance E.: The Water-Soluble B-Vitamins: IV. The Components of Vitamin B_2, Biochem. J. **29**: 722 (No. 3) 1935. Harris, L. J.: Flavin and the Pellagra-Preventing Factor as Separate Constituents of a Complex Vitamin B_2, ibid. **29**: 776 (No. 3) 1935. Halliday, Nellie, and Evans, H. M.: Dietary Production of the Syndrome of Deficiency in Vitamin B_6, J. Nutrition **13**: 657 (June) 1937. Booher, Lela E.: The Concentration and Properties of Vitamin H, J. Biol. Chem. **119**: 223 (June) 1937.

8. Richardson and Hogan.[2] Booher.[7]

9. Blyth, A. W.: The Composition of Cow's Milk in Health and Disease, J. Chem. Soc., London **35**: 530, 1879.

10. Ellinger, P., and Koschara, W.: Ueber eine neue Gruppe tierischer Farbstoffe (Lyochrome), Ber. d. deutschen chem. Gesellsch. **66**: 315, 1933. Kuhn, Richard; György, Paul, and Wagner-Jauregg, Theodor: Ueber eine neue Klasse von Natur-farbstoffen, ibid. **66**: 317, 1933.

11. Kuhn, Richard; György, Paul, and Wagner-Jauregg, Theodor: Ueber Lactoflavin, den Farbstoff der Molke, Ber. d. deutschen chem. Gesellsch. **66**: 1034, 1933.

12. György, Paul; Kuhn, Richard, and Wagner-Jauregg, Theodor: Das Vitamin B_2, Naturwissenschaften **21**: 560, 1933.

13. Edgar, Constance E.; Macrae, T. F., and Vivanco, Franciso: The Water-Soluble B-Vitamins: VII. Growth-Promoting Properties of Lactoflavin, Biochem. J. **31**: 879 (June) 1937.

14. Karrer, P.; Salomon, H., and Schöpp, K.: Isolierung des Hepaflavins, Helvet. chim. acta **17**: 419, 1934.

15. Ellinger, P., and Koschara, W.: The Lyochromes: A New Group of Animal Pigments, Nature **133**: 553, 1934.

16. Karrer, P.; Schöpp, K., and Benz, F.: Synthesen von Flavinen: IV, Helvet. chim. acta **18**: 426, 1935.

17. Kuhn, Richard; Reinemund, K.; Weygand, F., and Strobele, R.: Ueber die Synthese des Lactoflavins (Vitamin B_2), Ber. d. deutschen chem. Gesellsch. **68**: 1765, 1935.

18. György, Paul: Ueber die Wachstumswirkung synthetischer Flavinpräparate, Ztschr. f. Vitaminforsch. **4**: 223 (July) 1935.

19. György, Paul: Growth-Promoting Activity of Lactoflavin Administered Orally and Parenterally, Proc. Soc. Exper. Biol. & Med. **35**: 207 (Oct.) 1936.

20. Warburg, Otto, and Christian, Walter: Ueber ein neues Oxydationsferment und sein Absorptionsspektrum, Biochem. Ztschr. **254**: 438 (Oct. 24) 1932.

21. Warburg, Otto, and Christian, Walter: Ueber das neue Oxydationsferment, Naturwissenschaften **20**: 980, 1932.

In studies of the properties of the yellow enzyme, Robison's hexose-monophosphate ester was used as the substrate. It developed though that in the oxidation of the ester two other catalytic agents are required. These are a second enzyme (dehydrogenase or intermediary enzyme) which is colorless, and a coenzyme. The reactions of this type of respiration have been summarized [22] as follows:

Coenzyme + R.CHO + H_2O → coenzyme H_2 + R.COOH
Coenzyme H_2 + yellow enzyme → coenzyme + yellow enzyme H_2
Yellow enzyme H_2 + O_2 → yellow enzyme + H_2O_2

The entire system, then, that oxidizes hexose-phosphoric acid to phosphohexonic acid consists of a dehydrogenase (or intermediary enzyme), a coenzyme, the yellow oxidation enzyme and molecular oxygen.

Important details additional to our knowledge of the yellow oxidation enzyme were added by Theorell.[23] The enzyme was purified and found to have a nitrogen content of 15.5 per cent. A salt-free solution was then dialyzed against dilute hydrochloric acid and thus broken into two component parts, a protein and a fluorescent pigment, neither of which was able to transfer oxygen. They could be recombined, however, and the combination exerted normal enzymic activity. This protein fraction is specific and cannot be replaced by other native proteins such as globin. Theorell succeeded in isolating the prosthetic group of Warburg's yellow enzyme, which was identified as flavin phosphate. That the prosthetic group of yellow enzyme is a phosphoric acid ester is of considerable physiologic significance. It is true that free riboflavin may combine with the colloidal carrier to form an enzyme,[24] but this is probably of little quantitative significance.

A somewhat different approach to the physiology of riboflavin is due to the observations of Banga and Szent-Györgyi.[25] They used the heart muscle of swine and prepared a concentrate of "respiration-coferment." This concentrate also contained a golden yellow pigment, which they named "cytoflav." The absorption spectrum [26] of cytoflav showed that it has some structural similarity to Warburg's yellow enzyme, and it was shown by Kuhn and Rudy [27] that cytoflav is the phosphoric acid ester of riboflavin. It is significant that a glycerol extract of the small intestine of rats in 0.01 molar phosphate solution will convert flavin quantitatively to the phosphoric acid ester.[28]

Presumably the necessity for including riboflavin in the diet is that it is an essential constituent of the yellow oxidation enzyme that cannot be synthesized by the animal cell. It is probable, then, that the vitamin activity of flavin is due to the fact that it forms an ester with phosphoric acid, and this ester combines with protein to form the yellow oxidation enzyme. Apparently, if no hemin substances are present, all of the cell respiration is accomplished by Warburg's yellow ferment. On the other hand, if iron compounds are present it may be that only a small part of cell respiration is due to this enzyme.

22. Warburg, Otto; Christian, Walter, and Griese, Alfred: Wasserstoffübertragendes Co-Ferment, seine Zusammensetzung und Wirkungsweise, Biochem. Ztschr. **282**: 157 (Nov. 21) 1935.
23. Theorell, Hugo: Reindarstellung (Kristallisation) des gelben Atmungsfermentes und die reversible Spaltung desselben, Biochem. Ztschr. **272**: 155 (July 23) 1934; Reindarstellung der Wirkungsgruppe des gelben Ferments, ibid. **275**: 344 (Jan. 5) 1935.
24. Kuhn, Richard, and Rudy, Hermann: Lactoflavin als Co-Ferment; Wirkstoff und Träger, Ber. d. deutschen chem. Gesellsch. **69**: 2557, 1936.
25. Banga, I., and Szent-Györgyi, A.: Ueber Co-Fermente, Wasserstoffdonatoren und Arsenvergiftung der Zellatmung, Biochem. Ztschr. **246**: 203 (March 15) 1932.
26. Laki, K.: Ueber Cytoflav, Biochem. Ztschr. **266**: 202 (Oct. 24) 1933.
27. Kuhn, Richard, and Rudy, Hermann: Wachstumswirkung von Flavinphosphorsäuren, Ztschr. f. physiol. Chem. **239**: 47 (Feb. 28) 1936.
28. Rudy, Hermann: Enzymatische Phosphorylierung des Lactoflavins, Naturwissenschaften **23**: 286, 1935.

RIBOFLAVIN IN TUMOR TISSUE

As would be expected, the respiration of tumor cells has been given intensive study and a low concentration of vitamin B_2 (riboflavin) in carcinoma tissues has been reported.[29] Von Euler and Adler [29] found from 0.5 to 1 microgram of riboflavin per gram of fresh weight in the Roux sarcoma (chick) and from 0.025 to 0.5 microgram in the Jensen sarcoma (rat). Elliott, Benoy and Baker [30] studied two types of tumor tissue, the Philadelphia No. 1 rat sarcoma and the Walker No. 256 carcinoma. Of the various oxidative mechanisms studied, Elliott and his associates concluded that two and possibly three are not active in tumor tissue. They suggest that the low concentration of flavin may explain the failure of tumors to oxidize lactate or malate, though lack of enzymes or coenzymes would explain the failures equally well.

STORAGE AND EXCRETION OF RIBOFLAVIN

It has been reported [31] that the flavin content of organs cannot be much increased; even a tenfold increase in the amount of riboflavin consumed increased very slightly the amount of the yellow enzyme in the liver. On the other hand, the body guards its store of this substance and even in rats that die for lack of riboflavin the amount in the liver, kidney and heart is still about one third of the normal level.[32] When flavin was added to the diet of depleted animals, growth started before the reserves in the organs were restored to the original amount.

When the diet is adequate riboflavin is a normal excretory product, and Koschara [33] isolated crystalline uroflavin from urine. The typical yellow color of urine, however, is due to a different compound. According to Vivanco [32] the total excretion of flavin in the urine and feces of a rat is from 3 to 5 micrograms daily, and the feces contain about twice the amount present in urine. Within fourteen days after total deprivation of vitamin B_2 no flavin was excreted in the urine and growth was suspended.

The most extensive study of riboflavin excretion by man was conducted by Emmerie,[34] who reported that the daily elimination in the urine of males is from 819 to 1,250 micrograms or from 30 to 50 micrograms per hour. However, if the consumption of riboflavin is greatly increased there is a corresponding increase in the amount eliminated. In a continuation of this investigation, Emmerie [35] states that the body seems to act as a reservoir for flavin. On a very low intake the excretion exceeds the intake and on a high intake the excretion lags behind. After thirteen days of flavin restriction the urinary excretion varied between 43 and 60 per cent of the normal amount. Roscoe [36] observed a similar train of events. With an increased intake

29. György, Paul; Kuhn, Richard, and Wagner-Jauregg, Theodor: Verbreitung des Vitamins B_2 im Tierkörper, Ztschr. f. physiol. Chem. **223**: 21 (Feb. 5) 1934. von Euler, Hans, and Adler, Erich: Ueber das Vorkommen von Flavinen in tierischen Geweben, Ztschr. f. physiol. Chem. **223**: 105 (March 6) 1934.
30. Elliott, K. A. C.; Benoy, Marjorie P., and Baker, Zelma: The Metabolism of Lactic and Pyruvic Acids in Normal and Tumour Tissues: II. Rat Kidney and Transplantable Tumours, Biochem. J. **29**: 1937 (Aug.) 1935.
31. Kuhn, Richard; Kaltschmitt, Hans, and Wagner-Jauregg, Theodor: Ueber den Flavingehalt der Leber und Muskulatur von gesunden und B_2-avitaminotischen Ratten, Ztschr. f. physiol. Chem. **232**: 36 (March 11) 1935.
32. Vivanco, Francisco: Zur Flavinbilanz im Tierkörper, Naturwissenschaften **23**: 306, 1935. Kuhn, Kaltschmitt and Wagner-Jauregg.[31]
33. Koschara, W.: Ueber Harnlyochrome, Ztschr. f. physiol. Chem. **232**: 101 (March 25) 1935.
34. Emmerie, A.: Determination and Excretion of Flavins in Normal Human Urine, Nature **138**: 164 (July 25) 1936.
35. Emmerie, A.: On the Relation Between Intake and Excretion of Flavins, Acta brev. Neerland. **7**, 1937, Nos. 4, 5.
36. Roscoe, Margaret H.: The B Vitamins in Human Urine, Biochem. J. **30**: 1053 (June) 1936.

there was both an increased retention and excretion. The rate of destruction of riboflavin by the body has not been reported, but the observations cited indicate that some destruction does occur. One might estimate from Emmerie's data that a man should receive from 2 to 3 mg. of riboflavin daily.

OVERDOSAGE OF RIBOFLAVIN NOT TOXIC

Kuhn and Boulanger [37] reported that mice were not injured by doses of 340 mg. of riboflavin per kilogram of body weight, roughly 1,000 times the daily requirement. If calculated on the same weight ratio, a man weighing 70 Kg. would not be injured by ingesting 20 Gm. of lactoflavin, the amount present in 20,000 liters of cow's milk.

RIBOFLAVIN INTAKE AND AMOUNT SECRETED IN MILK

The amount of vitamin G, either in cow's milk [38] or in human milk,[39] depends somewhat on the amount consumed, but precise data on this point are not available. It has been estimated [40] that a cow may consume 50 mg. of riboflavin in one day and secrete 10 liters of milk containing 1 mg. of riboflavin per liter, thus giving a recovery of 20 per cent. Each of these quantities is subject to revision, but they are probably of the correct order of magnitude.

Yellow fluorescence does not appear in the milk of wetnurses on a vegetarian diet [41] but is quite evident if the intake of riboflavin is increased. Müller [42] observed that after a diet of 250 Gm. of ox liver, which contained approximately 4 mg. of riboflavin, the yellow fluorescence approached that of cow's milk, provided the total milk production was low. If large amounts of milk were secreted, the flavin was correspondingly diluted. Müller also gave intramuscular injections of riboflavin and stated that 0.75 mg. of riboflavin was the smallest amount that would give a discernible yellow fluorescence. The amount of vegetables, even of spinach, that would contain this amount is far too great to be consumed in a reasonable time. Müller reported that children who received milk with some yellow fluorescence did not grow more rapidly than those who consumed milk with blue fluorescence, but the source of the fluorescence was not determined in either case. Because a riboflavin avitaminosis in man has not been reported, it is not known definitely that an increase in the riboflavin content of milk would be of clinical significance.

RIBOFLAVIN CONTENT OF THE EYE

Von Euler and Adler [43] reported that the retina of fish eyes contains flavin and suggested that this flavin is of special significance when the light is not intense. The pigment may make it possible to use shorter waves by changing them into green light, for which the eye has a maximum sensitivity. They had an opportunity to examine a human eye and obtained from it between 0.2 and 0.4 microgram of riboflavin. A codfish eye contains about 50 micrograms, or more than 100 times as much.

RIBOFLAVIN DEFICIENCY AND CATARACT

Cataract in rats is a consequence of vitamin G deficiency,[44] though some observers report that the condition occurs only in rats that are deprived of the vitamin at an early age.[45] Day and Langston [46] observed that a conjunctivitis and keratitis usually developed at 7 or 8 weeks, followed by a dulness of the eyeball and finally a definite opacity. The incidence of the cataract was only a little less than 100 per cent. Cataract was also produced in mice, chickens and monkeys.[47] Definite evidence that riboflavin is the vitamin G that prevents this type of cataract has been provided by Day, Darby and Langston.[48]

Bourne and Pyke [49] repeated Day's work, with a maximum incidence of cataract of 31 per cent. György [50] states that cataract was not observed, even though a large number of animals was observed, and in the experience of Richardson and Hogan [2] this abnormality was rare. The reason for the discrepancies is not apparent, but there is no reason to doubt that under suitable experimental conditions cataract in rats is caused by a deficiency of flavin.

Curiously enough, Mitchell and Dodge [51] have reported that cataract in rats is a consequence of a high lactose diet, but according to Morgan and Cook [52] the lactose type of dermatitis is not healed by riboflavin.

RIBOFLAVIN, CANINE BLACKTONGUE AND HUMAN PELLAGRA

The hypothesis that blacktongue in dogs is due to a deficiency of vitamin G has not been sustained,[53] and more recent studies [54] show that this disease is not prevented by riboflavin.

37. Kuhn, Richard, and Boulanger, Paul: Ueber die Giftigkeit der Flavine, Ztschr. f. physiol. Chem. **241:** 233 (July 17) 1936.

38. Hunt, C. H., and Krauss, W. E.: The Influence of the Ration of the Cow upon the Vitamin B and Vitamin G Content of Milk, J. Biol. Chem. **92:** 631 (Aug.) 1931.

39. Donelson, Eva G., and Macy, Icie G.: Human Milk Studies: XII. The Vitamin B and Vitamin G Content Before and During Maternal Consumption of Yeast, J. Nutrition **7:** 231 (Feb.) 1934.

40. Kuhn, Richard; Wagner-Jauregg, Theodor, and Kaltschmitt, Hans: Ueber die Verbreitung der Flavine im Pflanzenreich, Ber. d. deutschen chem. Gesellsch. **67:** 1452, 1934.

41. Kayser, M. E.: Welcher Leberbestandteil geht in die Frauenmilch über? Deutsche med. Wchnschr. **63:** 136 (Jan. 22) 1937.

42. Müller, R.: Beobachten über den Lactoflavingehalt der Frauenmilch und seine Beeinflussung durch die Ernährung, Klin. Wchnschr. **16:** 807 (June 5) 1937.

43. Karrer, P.; von Euler, Hans, and Schöpp, K.: Flavin aus Fischaugen, Ark. Kemi. Min. Geol. **11B,** 1935, No. 54. von Euler, Hans, and Adler, Erich: Ueber Flavin und einen blau-fluorescierenden Stoff in der Netzhaut der Fischaugen, Ztschr. f. physiol. Chem. **228:** 1 (Oct. 3) 1934. von Euler and Adler.[29]

44. Day, P. L.; Langston, W. C., and O'Brien, C. S.: Cataract and Other Ocular Changes in Vitamin G Deficiency, Am. J. Ophth. **14:** 1005 (Oct.) 1931.

45. O'Brien, C. S.: Experimental Cataract in Vitamin G Deficiency, Arch. Ophth. **8:** 880 (Dec.) 1932. Yudkin, A. M.: Ocular Disturbances Produced in Experimental Animals by Dietary Changes, J. A. M. A. **101:** 921 (Sept. 16) 1933.

46. Day, P. L., and Langston, W. C.: Further Experiments with Cataract in Albino Rats Resulting from the Withdrawal of Vitamin G (B_2) from the Diet, J. Nutrition **7:** 97 (Jan.) 1934.

47. Day, P. L.; Langston, W. C., and Cosgrove, K. W.: The Appearance of Cataract and Dermatitis in Experimental Animals Given Vitamin G Deficient Diets Containing Casein and Egg Albumin, J. Nutrition Proc. **7:** 12 (May) 1934. Day, P. L.: Vitamin G Deficiency, Am. J. Pub. Health **24:** 603 (June) 1934.

48. Day, P. L.; Darby, W. J., and Langston, W. C.: The Identity of Flavin with the Cataract-Preventive Factor, J. Nutrition **13:** 389 (April) 1937.

49. Bourne, Margherita C., and Pyke, M. A.: The Occurrence of Cataract in Rats Fed on Diets Deficient in Vitamin B_2, Biochem. J. **29:** 1865 (Aug.) 1935.

50. György, Paul: Investigations on the Vitamin B_2 Complex: I. The Differentiation of Lactoflavin and the "Rat Antipellagra" Factor, Biochem. J. **29:** 741 (March) 1935.

51. Mitchell, Helen S., and Dodge, W. M.: Cataract in Rats Fed on High Lactose Rations, J. Nutrition **9:** 37 (Jan.) 1935.

52. Morgan, Agnes F., and Cook, Bessie B.: Cataract- and Dermatitis-Producing Nutritional Factors, Proc. Soc. Exper. Biol. & Med. **34:** 281 (March) 1936.

53. Cowgill, G. R.; Zimmerman, H. M., and Burack, Ethel: Studies of Vitamin G (B_2) Deficiency in Dogs: Preliminary Communication, Am. J. Physiol. **109:** 24 (July) 1934. Zimmerman, H. M., and Burack, Ethel: Studies on the Nervous System in Deficiency Diseases: II. Lesions Produced in the Dog by Diets Lacking the Water-Soluble, Heat-Stable Vitamin B_2 (G), J. Exper. Med. **59:** 21 (Jan.) 1934. Zimmerman, H. M.; Cowgill, G. R.; Bunnell, W. W., and Dann, M.: Studies on the Nervous System in Deficiency Diseases: Experimental Black Tongue, Am. J. Physiol. **109:** 440 (Sept.) 1934. Rhoads, C. P., and Miller, D. K.: Vitamin B_2 (G) and Canine Blacktongue, Science **81:** 159 (Feb. 8) 1935.

54. Birch, T. W.; György, Paul, and Harris, L. J.: The Vitamin B_2 Complex: Differentiation of the Antiblacktongue and the "P.-P." Factors from Lactoflavin and Vitamin B_6 (So-Called "Rat Pellagra" Factor): Parts I-IV, Biochem. J. **29:** 2830 (Dec.) 1935. Koehn, C. J., and Elvehjem, C. A.: Studies on Vitamin G (B_2) and Its Relation to Canine Black Tongue, J. Nutrition **11:** 67 (Jan.) 1936.

The earlier work of Cowgill and his collaborators [55] on neurologic manifestations in vitamin G (B_2) deficiency was repeated with some modifications, with about the same results. The neurologic changes are described as (*a*) marked degeneration of the medullary sheaths and axis cylinders of the peripheral nerves, (*b*) fairly common degeneration of the medullary sheaths of the posterior nerve roots, with less frequent involvement of the anterior roots of the cord, and (*c*) degeneration of the medullary sheaths and axis cylinders of the posterior columns of the spinal cord.

The authors did not show that riboflavin would prevent the lesions they ascribed to a deficiency of G (B_2) but in a personal communication dated June 30, 1937, Dr. Cowgill stated that they were investigating that specific point, and that up to that date riboflavin afforded the same degree of protection against the vitamin G deficiency syndrome as did the liver extract previously used. Rats on diets similar to those employed by Zimmerman and Burack do not develop degeneration of the myelin sheaths in the spinal cord or in peripheral nerves, so dogs and rats seem to respond differently to this deficiency.[56] Wolbach's attitude is apparently expressed in the statement that "the demonstrable nervous lesions of all the deficiency diseases are secondary effects" and "no one vitamin is concerned in the maintenance of myelin."

Sebrell, Hunt and Onstott [57] confirmed the fact that riboflavin has no therapeutic value in the treatment of blacktongue. It was demonstrated by Richardson and Hogan [2] that Goldberger's [58] blacktongue producing diet contains suboptimal amounts of flavin, and Sebrell, Onstott and Hunt [59] observed that this deficiency may be significant. Thus one dog that had been healed of blacktongue with the filtrate factor collapsed 182 days from the beginning of treatment. During one day 8 mg. of lactoflavin was injected intramuscularly and within twelve hours after the first injection the animal was normal. Evidently the dog requires flavin, and a ration could be compounded of natural foodstuffs which is deficient in this substance.

Dann [60] has reported that riboflavin is ineffective in the treatment of human pellagra. Fouts, Lepkovsky, Helmer and Jukes [61] treated two pellagrins with the filtrate factor of Lepkovsky, Jukes and Krause,[62] and reported that they were healed. This filtrate factor was prepared from an extract from which lactoflavin had been removed.

Evidently a deficiency of riboflavin is not the primary cause of either pellagra or blacktongue, but it is entirely possible that such a deficiency may be a complication. The diets that are commonly consumed in pellagrous districts are poor sources of riboflavin.

55. Zimmerman, H. M.; Cowgill, G. R., and Fox, J. C., Jr.: Neurologic Manifestations in Vitamin G (B_2) Deficiency: An Experimental Study in Dogs, Arch. Neurol. & Psychiat. **37**: 286 (Feb.) 1937.

56. Wolbach, S. B.: The Pathologic Changes Resulting from Vitamin Deficiency, J. A. M. A. **108**: 7 (Jan. 2) 1937.

57. Sebrell, W. H.; Hunt, D. J., and Onstott, R. H.: Lactoflavin in the Treatment of Black Tongue, Pub. Health Rep. **52**: 235 (Feb. 26) 1937.

58. Goldberger, Joseph, and Wheeler, G. A.: Experimental Black Tongue of Dogs and Its Relation to Pellagra, Pub. Health Rep. **43**: 172 (Jan. 27) 1928.

59. Sebrell, W. H.; Onstott, R. H., and Hunt, D. J.: The Treatment of Blacktongue with a Preparation Containing the "Filtrate Factor," and Evidence of Riboflavin Deficiency in Dogs, Pub. Health Rep. **52**: 427 (April 9) 1937.

60. Dann, W. J.: The Vitamin G Complex: I. The Nonidentity of Rat Dermatitis Due to Vitamin B_6 Deficiency and the Dermatitis of Human Pellagra, J. Nutrition **11**: 451 (May) 1936.

61. Fouts, P. J.; Lepkovsky, Samuel; Helmer, O. M., and Jukes, T. H.: Successful Treatment of Human Pellagra with the "Filtrate Factor," Proc. Soc. Exper. Biol. & Med. **35**: 245 (Nov.) 1936.

62. Lepkovsky, Samuel; Jukes, T. H., and Krause, Myrtise E.: The Multiple Nature of the Third Factor of the Vitamin B Complex, J. Biol. Chem. **115**: 557 (Sept.) 1936.

CHICK PELLAGRA

Chicks also develop "pellagra" symptoms [63] when reared on rations that have been subjected to prolonged dry heat, but the symptoms are not due to a deficiency of flavin.[64]

RIBOFLAVIN AND PERNICIOUS ANEMIA

Preliminary observations of Strauss and Castle [65] on the factor that prevents pernicious anemia led them to suggest that the extrinsic factor of pernicious anemia is vitamin B_2 (G) or is closely related to it, but practically all of the more recent reports are negative. Wills and Naish [66] used an extract of egg white as a source of vitamin G and incubated it with normal gastric juice and supplied it to a patient with pernicious anemia, but the outcome was negative. It was shown that same year that egg white contains riboflavin; therefore this newly discovered compound could not be the extrinsic factor. This view has been confirmed by numerous other workers.[67]

Stare and Thompson [68] administered riboflavin intramuscularly to five patients with pernicious anemia, with no effect. Ashford, Klein and Wilkinson [69] incubated riboflavin with normal gastric juice, and also with the press juice of hog's stomach, but the hematopoietic activity of the flavin was not increased by the treatment. According to these investigators riboflavin is not the extrinsic factor and is not the antipernicious anemia principle.

RIBOFLAVIN, ADRENAL CORTEX EXTRACT AND IODOACETIC ACID POISONING

Laszt and Verzár [70] supplied to rats a complete diet, to which had been added 0.02 per cent iodoacetic acid. This was consumed readily, but growth was retarded and after a time the rats became apathetic, there were alterations in the bones, skin and blood, and the adrenals were hypertrophic. If the rats were given 20 micrograms daily of riboflavin-phosphoric acid, growth was restored, but riboflavin itself was ineffective. If, instead of the riboflavin ester, the rats received injections of the adrenal cortex extract, growth was again resumed. From these observations the authors concluded that riboflavin must be phosphorylated before it can exercise its normal physiologic function, and that adrenal cortex extract is essential for the phosphorylation process. The toxicity of iodoacetic acid is largely due to the fact that it inhibits this ester formation.

63. Kline, O. L.; Keenan, J. A.; Elvehjem, C. A., and Hart, E. B.: The Use of the Chick in Vitamin B_1 and B_2 Studies, J. Biol. Chem. **99**: 295 (Dec.) 1932. Lepkovsky, Samuel, and Jukes, T. H.: The Vitamin G Requirement of the Chick, ibid. **111**: 119 (Sept.) 1935. Ansbacher, S.; Supplee, G. C., and Bender, R. C.: Pellagra-like Syndrome in Chicks, J. Nutrition **11**: 529 (June) 1936.

64. Elvehjem, C. A., and Koehn, C. J., Studies on Vitamin B_2 (G): The Nonidentity of Vitamin B_2 and Flavins, J. Biol. Chem. **108**: 709 (March) 1935.

65. Strauss, M. B., and Castle, W. B.: The Nature of the Extrinsic Factor of the Deficiency State in Pernicious Anemia and in Related Macrocytic Anemias, New England J. Med. **207**: 55 (July 14) 1932.

66. Wills, Lucy, and Naish, Alice: A Case of Pernicious Anemia Treated with Vitamin B_2 from Egg White, Lancet **1**: 1286 (June 17) 1933.

67. Lassen, H. C. A., and Lassen, H. K.: Yeast or Vitamin B_2 as "Extrinsic Factor" in Treatment of Pernicious Anemia, Am. J. M. Sc. **188**: 461 (Oct.) 1934. Brand, Erwin; West, Randolph, and Stuckey, C. J.: Vitamin G Potency of Purified Liver Preparations, Proc. Soc. Exper. Biol. & Med. **30**: 1382 (June) 1933. Miller, D. K., and Rhoads, C. P.: The Presence in Egg-White and in a Rice Polishings Concentrate Low in Vitamin B_2 (G) of an Anti-Pernicious Anemia Principle, New England J. Med. **211**: 921 (Nov. 15) 1934.

68. Stare, F. J., and Thompson, L. D.: Hepatoflavin and Pernicious Anemia, Proc. Soc. Exper. Biol. & Med. **33**: 64 (Oct.) 1935.

69. Ashford, C. A.; Klein, Louis, and Wilkinson, J. F.: Note on the Nonidentity of Lactoflavin and the "Extrinsic Factor" in Pernicious Anaemia, Biochem. J. **30**: 218 (Feb.) 1936.

70. Laszt, L., and Verzár, F.: Hemmung des Wachstums durch Jodessigsäure und antagonistische Beeinflussung durch Vitamin B_2 sowie Nebennierenrinden-Hormon, Arch. f. d. ges. Physiol. (Pflüger's) **238**: 693 (Dec. 23) 1935.

They published additional evidence [71] on this point and suggest that there is a similarity between iodoacetic acid poisoning and the Gee-Herter syndrome (celiac disease).[72] They believe that in both cases the formation of riboflavin phosphoric acid is inhibited. Rudy [73] also has studied iodoacetic acid poisoning of rats, but he observed that simple riboflavin is as effective in restoring growth as the phosphoric acid ester. The explanation of this discrepancy is not apparent.

Adrenalectomy interferes with fat absorption, but Laszt and Verzár [74] report that absorption is restored to the normal level by administering either adrenal cortex extract or riboflavin phosphoric acid.

RIBOFLAVIN IN AVIAN NUTRITION

Lepkovsky and Jukes [75] reported that chicks which received a basal diet which was deficient in flavin grew slowly, became weak and emaciated and developed diarrhea but did not develop dermatitis. Controls that received riboflavin were normal. Turkeys did not react in exactly the same way. After the eighth day a dermatitis developed which resembled the deficiency disease of chicks first described by Ringrose, Norris and Heuser.[76] If the basal diet was supplemented with riboflavin in the proportion of 2 mg. of the vitamin per hundred grams of the diet, dermatitis did not develop, there was no mortality and growth was rapid. There was no mention of leg weakness in either chicks or turkeys.

Bethke, Record and Wilder [77] provided baby chicks with a basal ration that was deficient in flavin and observed that it caused a characteristic leg disorder as well as a subnormal rate of growth. When the basal diet was supplemented with 40 micrograms of riboflavin every other day the weights were normal and there were no leg disorders. The ration used by Bethke and his collaborators was not strikingly different from diet 60 supplied by Lepkovsky and Jukes to turkeys, so it is not clear why the former reported a high incidence of leg weakness and the latter reported none at all.

The amount of vitamin G in the ration of laying hens determines, within limits, the amount in the eggs,[78] and this amount in turn determines the hatchability of the eggs.[79]

MISCELLANEOUS

When rats receive diets that are deficient in vitamin G the oxygen uptake of skin cells is lowered.[80] The percentage of dry matter and of total fat in the tissues is markedly reduced, and that of water correspondingly increased, but these symptoms may be due merely to inanition.[81]

If the heart is perfused under low oxygen pressure the muscular contractions are weakened.[82] A normal heart beat is restored either by physiologic oxygen pressure or by adding a minute quantity of riboflavin to the perfusion medium.

It has been reported [83] that strenuous muscular exercise may cause a hypertrophy of the adrenal glands of rats, amounting to 82 per cent. The hypertrophy was prevented by feeding large amounts of autoclaved yeast but not by administering riboflavin.[84] It was suggested that the activity of yeast was due to its content of vitamin B_6.

A deficiency of vitamin G has little or no effect on the concentration of tissue enzymes.[85]

71. Verzár, F., and Laszt, L.: Der Zusammenhang zwischen Vitamin B_2 und dem Hormon der Nebennierenrinde, Arch. f. d. ges. Physiol. (Pflüger's) **237**: 476 (May 18) 1936.
72. Laszt, L., and Verzár, F.: Ueber chronische Jodessigsäurevergiftung und ihre Beziehung zur Gee-Herterschen Krankheit, Arch. f. d. ges. Physiol. (Pflüger's) **237**: 483 (May 18) 1936.
73. Rudy, Hermann: Ueber die Wachstumswirkung von Lactoflavinphosphorsäure und gelbem Ferment, Ztschr. f. angew. Chem. **49**: 323, 1936.
74. Laszt, L., and Verzár, F.: Nebennierenrinde und Fettresorption, Biochem. Ztschr. **228**: 351 (Dec. 12) 1936.
75. Lepkovsky, Samuel, and Jukes, T. H.: The Response of Rats, Chicks, and Turkey Poults to Crystalline Vitamin G (Flavin), J. Nutrition **12**: 515 (Nov.) 1936.
76. Ringrose, A. T.; Norris, L. C., and Heuser, G. F.: The Occurrence of a Pellagra-like Syndrome in Chicks, Poultry Sc. **10**: 166, 1931.
77. Bethke, R. M.; Record, P. R., and Wilder, O. H. M.: Further Studies on Vitamin G in Chick Nutrition with Special Reference to Flavins, Poultry Sc. **16**: 175, 1937.
78. Bethke, R. M.; Record, P. R., and Wilder, F. W.: The Effect of the Ration of the Hen on the Vitamin G Content of Eggs, with Observations on the Distribution of Vitamin B and G in Normal Eggs, J. Nutrition **12**: 309 (Sept.) 1936. Norris, L. C.; Wilgus, H. S.; Ringrose, A. T.; Heiman, V., and Heuser, G. F.: The Vitamin G Requirement of Poultry, Bull. 660, Cornell Agric. Exper. Sta., 1936.
79. Ellis, N. R.; Miller, David; Titus, H. W., and Byerly, T. C.: Effect of Diet on Egg Composition: III. The Relation of Diet to the Vitamin B and the Vitamin G Content of Eggs, Together with Observations on the Vitamin A Content, J. Nutrition **6**: 243 (May) 1933. Bethke, R. M.; Record, P. R., and Kennard, D. C.: The Relation of Vitamin G to the Hatchability of Hens' Eggs, J. Nutrition **12**: 297 (Sept.) 1936. Norris, Wilgus, Ringrose, Heiman and Heuser.[78]
80. Adams, P. D.: The Oxygen Uptake and Composition of the Skin of Rats in Vitamin G Deficiency, J. Biol. Chem. **116**: 641 (Dec.) 1936.
81. Remp, D. G., and Bing, F. C.: Inanition as a Factor in Vitamin G Deficiency, J. Nutrition **8**: 457 (Oct.) 1934.
82. Dietrich, S., and Pendl, E.: Vitamin B_2 (Lactoflavin) und Erstickung des isolierten Froschherzens, Klin. Wchnschr. **16**: 13 (Jan. 2) 1937.
83. von Beznák, A., and Perjés, J.: Ueber den Zusammenhang der Nebennierenrindenhypertrophie mit der körperlichen Arbeit und mit dem Gehalt der Nährung an Vitamin B, Arch. f. d. ges. Physiol. (Pflüger's) **236**: 181 (Sept. 14) 1935.
84. Perjés, J.: Weitere Untersuchungen über die wirkung einzelner Glieder des Vitamin B-Komplexes auf die durch körperliche Arbeit bedingte Volumzunahme der Nebennierenrinde, Arch. f. d. ges. Physiol. (Pflüger's) **238**: 341 (Dec. 18) 1936.
85. Kik, M. C.; Sure, Barnett, and Buchanan, Kathryn Sue: Enzymic Efficiency in Avitaminosis: III. Influence of Vitamin B_1 and G Deficiencies on the Concentration of Blood and Tissue Enzymes, Am. J. Digest. Dis. & Nutrition **3**: 490 (Sept.) 1936.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

PAUL NICHOLAS LEECH, Secretary.

PROCAINE-ABBOTT (See New and Nonofficial Remedies, 1937, p. 69).

The following dosage forms have been accepted:

Ampoules Ephedrine Hydrochloride 2½% and Procaine Hydrochloride 1%, 2 cc.: Ephedrine hydrochloride 2.5 per cent and procaine hydrochloride 1 per cent in chemically pure water to make 2 cc.

Ampoules Ephedrine Hydrochloride 5% and Procaine Hydrochloride 1%, 1 cc.: Ephedrine hydrochloride 5 per cent and procaine hydrochloride 1 per cent in chemically pure water to make 1 cc.

ADRENALIN (See New and Nonofficial Remedies, 1937, p. 222).

Solution of Adrenalin Chloride 1:100, 5 cc. vials.—A solution containing 1 part adrenalin (as adrenalin chloride) in 100 parts of physiological solution of sodium chloride preserved by the addition of 0.5 per cent of chloretone and not more than 0.1 per cent of sodium bisulfite.

Actions and Uses.—Injections of solutions of epinephrine (1-1,000) are known to be useful in the treatment of severe attacks of bronchial asthma. Recent evidence indicates that the oral inhalation of a solution of epinephrine ten times stronger than those used by hypodermic injection gives relief in acute attacks of bronchial asthma when other measures fail. The physician should familiarize himself with the procedure before employing it in the treatment of his patients. It is absolutely essential that such treatment be instituted under the supervision of the physician and the patient warned of the dangers of using a solution of such strength carelessly. It is also necessary that the atomizer or nebulizer which is used in the administration of such solutions produce a fine mistlike spray free from minute droplets. Every precaution must be taken to avoid confusion between this solution (1:100) and the official 1:1,000 solution of epinephrine hydrochloride, since the 1:100 solution is not suitable for hypodermic use and should never be employed in that manner.

Dosage.—A definite dosage cannot be stated for the use of this preparation. It is obviously essential that the amounts used not exceed the minimal amount which will give effective relief. It is best to start with a single compression of the bulb of the atomizer or nebulizer until it is determined what dosage is adequate and safe. Its use should not be repeated until several minutes have passed so that the full effect of the inhalation can be observed before additional amounts are used.

SULFANILAMIDE-P. D. & CO. (See THE JOURNAL, Nov. 6, 1937, p. 1543).

The following dosage form has been accepted:

Sulfanilamide Tablets, 7½ grains.

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SATURDAY, APRIL 9, 1938

ELEVEN DEATHS FROM A CANCER TREATMENT

The complete story of the tragedy in Orlando, Fla., reported in a special article[1] in this issue of THE JOURNAL, cannot yet be written. Enough facts are already available, however, to warrant a reemphasis of the warning that THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION has made repeatedly against the use in medical practice of unstandardized, unestablished and uncontrolled methods of treatment.

In October 1935, when the "ensol" treatment was launched from Kingston, Ont., with what appeared to be carefully planned publicity in the newspapers, THE JOURNAL issued a warning to the effect that the product was being developed under uncontrolled conditions and that its exploitation would inevitably lead to grief for those concerned. Now almost three years have passed. Evidence resulting from experiments on animals indicates that the method is without established value. The clinical evidence has been uncontrolled. There is really no good clinical evidence that this method has any beneficial effect in the treatment of cancer. Nevertheless a considerable number of doctors in various parts of the United States have used a product of this type in the treatment of cancer and it is obvious that one at least has come to grief.

As we go to press, it seems that the Biochemical Research Foundation of the Franklin Institute of Philadelphia prepared the product called ℞ or Rex, which caused the deaths of the patients in Orlando, Fla. It seems likely that batch 152 was prepared on a Friday, some of it permitted to stand over Saturday and Sunday, and then sterilized on Monday. If the tetanus organism was present in the product it would have had two days in which to develop the toxin, so that when the product was sterilized on Monday a sufficient amount of tetanus toxin was present to cause death. These possibilities remain to be confirmed by more evidence—but certainly enough evidence is available to warrant the suggestion.

At present there are being exploited to the American people a half dozen or more treatments of cancer that are in no way established as actually of value in the treatment of that condition. Time is the great tester of cancer cures. Many of these methods of treatment have already been before the public long enough to indicate that they are absolutely worthless. Enough is now known about the nature of cancer to indicate that the value of a cancer remedy cannot be established by sending it at random to physicians scattered all over the country, who use it in practice for a fee. The development, exploitation and promotion of "ensol" and of its progeny "℞" have been unscientific, unethical and unwarranted. Some means must be found to protect the people against their use as guinea pigs in this kind of experimentation.

1. Eleven Deaths from a Cancer Treatment, this issue, p. 1183.

ENDOCREME—A COSMETIC WITH A MENACE

In current periodicals, especially those directed to women, there have been appearing the advertisements for a product called Endocreme. In some of the latest copy which, incidentally, bears the approval of the Good Housekeeping Bureau, appear the following statements:

> Endocreme contains a counterpart of the natural bodily element which helps account for that pink freshness of a youthful skin. This substance is known to the medical world as es-tra-diol, and Endocreme is the only cosmetic which contains es-tra-diol. It helps replenish the supply of the very substance which your skin may lack!
>
> Endocreme, therefore, is more than "just a face cream." It's an active, vital cosmetic which begins its work with the substructure of the skin. In later life, the skin tends to fall into lines and wrinkles because the tissues underneath the skin sag. When Endocreme firms and tones these underlying tissues, the skin is smoothed out again . . . pores decrease in size . . . and lines begin to disappear.

Not only is the product widely advertised, it is also sold over the counter in many leading department stores, drug stores and beauty shops. For more than a year this product, manufactured by the Hirestra Laboratories, Inc., of New York, has been offered to the public without a word of warning that it may be a potential menace to health and life. Now, on the basis of available evidence, which the manufacturer should have had before the product was sold openly to the public, THE JOURNAL is warranted in warning users of this product that its indiscriminate use may lead to dangerous consequences, that it possesses the potentiality of bringing about serious changes in the genital and reproductive organs of women, that it may induce changes in the breasts, and that there is, in addition to possible disorganization of the menstrual cycle, the potentiality of the production of cancer.

Endocreme is claimed to contain 0.625 mg. of estradiol per ounce. The purchaser of this preparation is told to apply one-half teaspoonful to the face, neck, arms and hands every night and is cautioned against omitting treatment for a single night if the best results are to be obtained. In one of the early advertisements

for this product, the statement is made: "There is no danger of overapplication. The skin absorbs only as much as it needs of the vitalizing hormone contained exclusively in Endocreme, the only hormone of its type which has been scientifically proved to be absorbed by the skin." Of course, it has been known for some time that estrogens may be absorbed from the skin and may thus exert systemic effects.[1] Nevertheless, it is claimed that Endocreme acts on the skin alone and has no effect on internal organs.

From many sources now comes scientific evidence indicating the potentiality for serious harm that lies in the persistent use of the product called Endocreme. At the University of Chicago Prof. Carl R. Moore[2] has been making some experiments which are to be presented before a national scientific organization within a few weeks but which have been made immediately available to THE JOURNAL so that this warning might be issued. Samples were purchased from a leading department store in the city of Chicago. The product is available in department stores and drug stores everywhere at the price of $3.50 for a two ounce jar.

One-half teaspoonful of the ointment was found to weigh about 1.82 Gm.; on the basis of the claimed content of estradiol, this quantity of cream represents approximately 0.04 mg. of estradiol. About one-fifth this dose, 0.372 Gm. of Endocreme (0.0082 mg. of estradiol), was rubbed daily on the back of the neck (previously shaved) of spayed female rats, young normal male rats and normal male guinea pigs for periods of from two to twenty-one days. The Chicago investigators found that this amount of Endocreme (1) induces an estrous reaction in castrated female rats in forty-eight hours, (2) maintains normal uterine weight in such rats, (3) induces growth of mammary glands in normal male guinea pigs, and (4) exerts profound degenerative changes in the testes of normal young rats. They believe that continued application of Endocreme to large areas of skin in normal women may have serious consequences in possible disorganization of the menstrual cycle.

Inunction of an ointment containing a potent steroid may be even more effective in producing systemic effects than parenteral injection; indeed, Moore and his associates have found the former to be the more effective method of administering androgens (closely related chemically to the estrogens) owing apparently to slower absorption and hence better utilization. Zondek[1c] found that a given amount of estrogen inuncted into the skin was as effective in the production of mammary growth as the same amount injected subcutaneously. However, to produce an estrous effect seven times as much was necessary by cutaneous administration. Thus, it may be seen that daily inunction of Endocreme may actually lead to as great a systemic effect, at least with respect to certain organs, as parenteral injection of an equal amount of estrogen.

While the dosage of estradiol used in the experiments cited represents a much larger amount per unit of body weight than that recommended for the human being, one must consider both the enormously larger surface area to which the ointment is applied in women as well as the much longer period of administration. Further, the known proliferative effects of estrogens on tissues with which they come into direct contact in high concentration leads to apprehension as to the probable result should Endocreme be applied regularly to a potentially neoplastic pigmented mole such as occurs frequently in the human skin.

Lesions of various types and in various organs have been produced in animals through the use of large doses of estrogen over long periods.[3] Among these carcinoma of the breast appears to be the most common, but other tissues may also be affected. Two years ago, Gardner and his co-workers[4] reported the production of sarcoma at the site of injection of an estrogenic preparation and recently these investigators[5] have produced carcinoma of the cervix in mice. In an article in this issue of THE JOURNAL Drs. Gardner, Allen, Smith and Strong in the department of anatomy of Yale University at New Haven found that a tumor of the cervix of the uterus of large size developed in a mouse receiving estradiol and was successfully transplanted into male and female mice of the same inbred strain. They believe also that smaller growths observed in eighteen other mice which had received this substance are probably precancerous growths or early cancers. Incidentally, the injection of the oil used as a solvent for the estradiol benzoate did not produce any such changes.

Shortly after Endocreme was first launched, a periodical called *Drug and Cosmetic Industry*[6] itself issued the following warning:

> We have published little or nothing on . . . hormones in cosmetics . . . since we are, at least for the present, opposed to the use of these materials in cosmetics. . . . until knowledge is fuller these products should not be administered indiscriminately and without supervision.

Apparently, even experts in the cosmetic industry had misgivings!

Estrogen, as has already been well established, has definite uses in medicine when properly employed under controlled conditions. Now evidence becomes available that this endocrine principle, like all other potent endocrine substances, is a two-edged sword capable of remarkable achievements when properly used and

1. (a) Zondek, Bernard: Folliculin, Klin. Wchnschr. **8**: 2229 (Nov. 26) 1929; (b) Hormone des Ovariums und des Hypophysenvorderlappens, ed. 2, Vienna, Julius Springer, 1935; (c) Perkutane Follikelhormontherapie, Schweiz. med. Wchnschr. **65**: 1168 (Dec. 7) 1935.
2. Moore, C. R.; Lamar, Jule K., and Beck, Naomi: Unpublished observations made available through the courtesy of Dr. Moore.
3. The Role of Estrogenic Substance in Tumor Formation, editorial, J. A. M. A. **106**: 1093 (March 28) 1136.
4. Gardner, W. W.; Smith, G. M.; Strong, L. C., and Allen, Edgar: Development of Sarcoma in Male Mice Receiving Estrogenic Hormones, Arch. Path. **21**: 504 (April) 1936.
5. Gardner, W. W.; Allen, Edgar; Smith, G. M., and Strong, L. C.: Carcinoma of the Cervix of Mice Receiving Estrogens, this issue, p. 1182.
6. Hormone Creams, reader's questions, Drug & Cosmetic Industry **41**: 706 (Nov.) 1937.

dangerous when carelessly employed. The continued reckless and indiscriminate use of this substance in a cosmetic cream is certainly unwarranted until it has been proved beyond the shadow of a doubt that the menace clearly established in animals does not likewise prevail in human beings.

CYSTINE AND METHIONINE

Man's knowledge of sulfur dates back to the time of the ancients. The essential nature of this element and its metabolic significance constitute an important chapter in the history of physiologic chemistry. Most of the sulfur that is concerned with metabolism enters the body in organic combination, largely as protein. Although cystine, the first sulfur-containing amino acid known to exist in proteins, was discovered by Wollaston in 1810 in a renal calculus, its presence in protein was not demonstrated until eighty years later. In 1915 Osborne and Mendel reported the results of experiments which are interpreted to mean that cystine is an indispensable amino acid; i. e., it must be provided in the food if physiologic well being is to be supported.

In 1921 Mueller [1] discovered a second sulfur-containing amino acid in the digestion products from casein; this compound was subsequently named methionine. It is a methiol derivative of butyric acid and essentially a homologue of cystine. Eleven years after the discovery of methionine, Jackson and Block [2] showed that an experimental purified ration, too poor in cystine to permit normal growth in young rats, could be made adequate in this respect by the addition of methionine. This demonstration of apparent interconvertibility of cystine and methionine raised the question of the essential nature of both these amino acids in nutrition. Later, on the basis of studies of the behavior of the sulfur-containing amino acids in a cystinuric patient, Brand and his associates [3] questioned the indispensability of cystine while placing methionine in this category.

Recently new experimental devices have been employed in studies designed to test further the problem of the nutritive significance of cystine and methionine. Employing a highly purified experimental diet containing practically all the nitrogen in the form of a known mixture of amino acids, Womack, Kemmerer and Rose [4] proved that increase in body weight of young rats was secured when methionine and cystine together or when methionine alone was present but that failure resulted with cystine alone. Again, White and Beach [5] using arachin, a protein from the peanut which contains adequate cystine but is deficient in methionine, have demonstrated that under these conditions methionine, but not cystine, will support progressive increase in body weight of experimental animals. Although these studies show that methionine is indispensable apart from its relationship to cystine, it appears from the available evidence that the latter can serve to stimulate growth when methionine is present in suboptimal quantities.

The foregoing conclusion, of fundamental significance in the biochemistry of proteins, is a triumph of skilful and critical work in the fields of nutrition and organic chemistry. Although there doubtless are other as yet unidentified sulfur-containing components of the protein molecule,[6] the recent advances in the knowledge of the sulfur-containing amino acids of proteins have served to further the establishment of protein metabolism on a simpler and more rational basis.

1. Mueller, J. H.: Proc. Soc. Exper. Biol. & Med. **19**: 161 (Jan.) 1922.
2. Jackson, R. W., and Block, R. J.: J. Biol. Chem. **98**: 465 (Nov.) 1932.
3. Brand, Erwin; Cahill, G. F., and Harris, M. M.: J. Biol. Chem. **110**: 399 (July) 1935.
4. Womack, Madelyn; Kemmerer, K. S., and Rose, W. C.: J. Biol. Chem. **121**: 403 (Nov.) 1937.
5. White, Abraham, and Beach, E. F.: J. Biol. Chem. **122**: 219 (Dec.) 1937.

Current Comment

CARBON MONOXIDE AND THE ABILITY TO DRIVE AUTOMOBILES

The interiors of about 5 per cent of automobiles tested on the highways contain sufficiently high concentrations of carbon monoxide to produce symptoms such as dizziness or collapse. Forbes and his colleagues [1] devised two sets of experiments to test the driving ability of persons subjected to an atmosphere containing enough carbon monoxide to produce degrees of blood saturation comparable to those obtaining in drivers. In the first experiments, about 900 cc. of pure carbon monoxide was put into 1,000 liters of air in a large bag. The subjects breathed this for an hour through a mouth piece. Blood samples were taken before the exposure, after thirty minutes of exposure and at the end of the experiment. The inspired and expired air was analyzed and the volume of respiration was measured, together with the respiratory rate, the pulse rate and the concentration of the blood sugar. The second set of experiments was made in substantially the same manner except that automobile exhaust gases were used in place of pure carbon monoxide. The tests used to determine the effect on driving ability were the time taken to remove the foot from the accelerator, the time to push down a brake pedal after a red light was flashed on, perception of depth, ability to see dim objects at the side of a bright light, ability to see the approach or recession of bright objects, and accuracy of steering. In the second group of experiments the steering test and the test with the bright light were abandoned. A coordination testing device was substituted. In eleven experiments of this nature on eight normal men it was found that their performances in simple tests of reaction time, binocular

6. Blumenthal, Doris, and Clarke, H. T.: J. Biol. Chem. **110**: 343 (July) 1935.

1. Forbes, W. H.; Dill, D. B.; De Silva, H., and Van Deventer, F. M.: The Influence of Moderate Carbon Monoxide Poisoning upon the Ability to Drive Automobiles, J. Indust. Hyg. & Toxicol. **19**: 598 (Dec.) 1937.

vision and similar trials were unaffected by breathing carbon monoxide until their blood was 30 per cent or more saturated. At 45 per cent saturation the quality of performance was only slightly impaired. Subjectively the persons tested felt normal up to 30 per cent saturation, but the two whose blood reached a 45 per cent saturation appeared and felt unequal to driving a car because unable to think of many things at once. The pulse rate, respiratory rate and concentration of blood sugar also remained unchanged up to 30 per cent saturation. It was agreed, however, that a test was needed to show the ability to attend to several things at once and that there might be some impairment with low saturation which could not be demonstrated by tests applied.

THE MORE ABUNDANT DIET

Current emphasis on the essential components of diet has perhaps caused some neglect of the part which quantity plays. McLester,[1] in an address given before the American Dietetic Association in Richmond last October, spoke feelingly of the illnesses that have been made worse by the injudicious restriction of food and of the benefit that may be reasonably expected from the administration of a more abundant diet. First among those diseases unfavorably affected by dietary restriction is typhoid. Today, although still without specific treatment, typhoid patients, in contradistinction to past procedure, are given liberal rations with graphically demonstrable effect on the case fatality rates. Similarly and only slightly less striking are the results in Bright's disease. The discovery that low plasma protein is a salient feature of glomerular nephritis, and the subsequent introduction of liberal protein rations, have no doubt saved many patients with nephritis. A similar story is being written with essential hypertension and nephrosclerosis. Although neither is primarily a disease of the kidneys, protein restriction probably has been carried too far in the past. Even more important than treatment is the adequacy of diet in the prevention of disease. The prevention of infection by dietary means has been predicated repeatedly during the last few years. In fact, liberal amounts of foods rich in vitamins are almost certainly one factor in the protection against infection. Nutritive deficiency, McLester believes, is not infrequently the underlying cause of such disabilities as lack of appetite, digestive disorders, vague pains and discomforts unassociated with other organic disease. Such symptoms are seen particularly among women, young and old, irrespective of economic status, who would remain stylishly thin, and among food faddists and those who, because of some digestive disorder, have been caught in a vicious circle of dietary restriction. The ideal diet, therefore, is one which both in sickness and in health will meet but not exceed the individual's caloric needs and which will provide a liberal excess of daily calculated requirements of nutritive essentials, especially proteins and vitamins.

1. McLester, J. S.: The More Abundant Diet, J. Am. Dietet. A. 14: 1 (Jan.) 1938.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ARKANSAS

State Medical Meeting at Texarkana.—The sixty-third annual session of the Arkansas Medical Society will be held at the Grim Hotel, Texarkana, April 18-20, under the presidency of Dr. Oscar J. T. Johnston, Batesville. The following scientific program has been arranged:

Dr. John H. J. Upham, Columbus, Ohio, President, American Medical Association, Clinical Implications of Some Recent Studies in Gastric Motility.
Dr. M. Herbert Barker, Chicago, Phases of Renal Edema and Their Treatment.
Dr. John Shelton Horsley, Richmond, Va., The Symptoms, Diagnosis and Treatment of Cancer of the Stomach.
Dr. Charles R. Gowen, Shreveport, La., Collapse Therapy in Pulmonary Tuberculosis.
Dr. Alexis F. Hartmann, St. Louis, Present Status of Sulfanilamide Therapy for Severe Infections in Infants and Children.
Dr. Don H. O'Donoghue, Oklahoma City, Fractures of the Elbow.
Dr. Clarence B. Erickson, Shreveport, Treatment of Some Common Skin Diseases.
Dr. Arthur G. Schoch, Dallas, Diagnosis and Treatment of Early Syphilis.
Dr. Wiley R. Buffington, New Orleans, Detached Retina.
Dr. Nesbitt L. Miller, Oklahoma City, Allergy in General Practice.
Dr. Frederick J. Taussig, St. Louis, Controlling the Size of the Family.
Dr. Roland M. Klemme, St. Louis, Diagnosis and Treatment of Brain Tumors.

The breakfast for past presidents will be held Wednesday morning and the conference of county society secretaries, to be addressed by Dr. Shade D. Neely, Muskogee, Okla., will take place Monday morning. There will be a golf tournament Tuesday at the Texarkana Country Club. The Arkansas State Pediatric Society will meet Monday at the Grim Hotel and the fourteenth annual meeting of the Woman's Auxiliary will be held at the McCartney Hotel, Texarkana. Speakers at a public session will include Dr. Horsley on "The Menace of Cancer" and Dr. Upham, "Present Day Problems in the Medical Profession."

CALIFORNIA

Society News.—Dr. Alvin G. Foord, Pasadena, addressed the San Diego County Medical Society March 8 on "Classification and Diagnosis of Anemias."——Dr. Pierce C. Barrette, San Jose, among others, addressed the Santa Clara County Medical Society recently on "Effectiveness of 'Water Soluble' Iodine in Reversing the Wassermann Reaction" and Dr. Marvin B. Morehead, "Internal Pneumolysis in the Treatment of Pulmonary Tuberculosis."

Study of Hospitalization of Insane.—Five physicians have been appointed to a committee to aid the state interim committee on state hospitals, authorized by the legislature to study hospitalization of the insane, according to the Oakland *Tribune*. Those named on the advisory committee are Drs. Glenn E. Myers, Compton; Forrest N. Anderson, Los Angeles; Benjamin W. Black, Oakland; Edward W. Twitchell, San Francisco, and Clifford W. Mack, Livermore.

CONNECTICUT

Diagnostic Clinics for Crippled Children.—The first crippled children's diagnostic clinic under the Connecticut State Plan for Crippled Children Services was held at the Windham Community Memorial Hospital, Willimantic, February 3, and the second at the William W. Backus Hospital, Norwich, February 9. Others were held February 24 at Danbury Hospital, Danbury; March 2 at Newington Home for Crippled Children, Newington, and March 11 at Stamford Hospital, Stamford.

Dr. Steiner Honored.—The Hartford Medical Society gave a dinner, February 7, in honor of Dr. Walter R. Steiner, who has served as librarian for thirty-five years and for whom the society recently named its library. Dr. Thomas Archibald Malloch, librarian of the New York Academy of Medicine, New York, gave an address on "Medical Libraries." A portrait of Dr. Steiner was presented to the society and unveiled. Dr. Steiner was president of the Medical Library Association from 1931 to 1933; secretary of the Connecticut State Medical Society from 1905 to 1912, chairman of its council, 1929-1933, and president, 1934-1935. He was president of the Hartford

Medical Society in 1929 and of the American Clinical and Climatological Association, 1934-1935. Except for the sessions of 1926 and 1928, Dr. Steiner has been a member of the House of Delegates of the American Medical Association since 1919.

ILLINOIS

Committee to Standardize Diagnostic Laboratory Procedures.—The appointment of a special state committee on standardizing diagnostic laboratory procedures throughout Illinois has been announced by the state department of health. Members include:

Dr. Alexander A. Day, professor of bacteriology, Northwestern University Medical School, Chicago.
Dr. Irving H. Neece, Decatur, councilor of the seventh district of the the Illinois State Medical Society.
Dr. Lewis R. Hill, pathologist, Chicago.
Dr. John L. White, chief of the diagnostic laboratories, Chicago City Health Department.
Dr. Lloyd Arnold, professor of bacteriology and public health, University of Illinois College of Medicine, Chicago.
Reuben Kahn, D.Sc., Ann Arbor, Mich., consultant.

The first meeting of the committee was held March 15. Its function will be to work out standards for the approval of diagnostic laboratories in the state and to act as referee in cases of dispute concerning the approval of local laboratories.

Chicago

Meetings of Chicago Medical Society.—Dr. Olin West, Secretary and General Manager, American Medical Association, will address the Chicago Medical Society at a special meeting April 10 in the Goodman Theater on "Medicine and the Government." Dr. Logan Clendening, Kansas City, Mo., clinical professor of medicine, University of Kansas School of Medicine, will deliver a public lecture sponsored by the medical society at the Goodman Theater April 13 on "The Care and Feeding of Humans."

Bertha Kaplan Spector Dies.—Bertha Kaplan Spector, Ph.D., research associate in medicine at the University of Chicago and well known for her work in amebic dysentery, died March 26 in Billings Hospital of Hodgkin's disease, aged 41. Dr. Spector, who took her doctorate at the university in 1931, had been on the staff since July 1, 1929, working under a special grant of the Douglas Smith Foundation in the Department of Medicine, Division of Biological Sciences. She had served as research assistant at the Bussey Institute of Harvard University; bacteriologist at the U. S. Army Base Hospital, Fort Riley, Kan.; the U. S. Veterans' Administration Facility, Hines, Ill.; Cook County Hospital and on the staff of the University of Illinois College of Medicine. From 1934 until her death she was protozoologist of the U. S. Public Health Service. She assisted in the investigation of an outbreak of amebic dysentery in Chicago in 1926 and did important work in the epidemic in 1933. She also assisted in a study of dysentery in New Mexico made by the National Institute of Health, U. S. Public Health Service, in 1936 and 1937, among certain groups of American Indians. In 1929 Dr. Spector received the Beaumont Prize from the University of Illinois for her research on diseases of the gastro-intestinal tract.

IOWA

Society News.—Dr. Albert Graeme Mitchell, Cincinnati, discussed "What I Do Not Know About Endocrines" before the Linn County Medical Society March 31 in Cedar Rapids. The society was addressed March 3 by Drs. Nathaniel G. Alcock, Iowa City, on "Malignancy of the Kidney"; Paul F. Stookey, Kansas City, Mo., "Staphylococcus Septicemia," and James H. Allen, Iowa City, "Staphylococcus Conjunctivitis."——Dr. Frank R. Peterson, Iowa City, addressed the Black Hawk County Medical Society in Waterloo February 15 on "Cancer of the Colon and Rectum."——At a meeting of the Crawford County Medical Society in Denison February 15 Dr. John Harry Murphy, Omaha, discussed "Tuberculosis in Children."—— Drs. Arthur Steindler and Joseph H. Wolfe, Iowa City, presented a symposium on fractures before the Johnson County Medical Society, Iowa City, February 2.

KANSAS

Educational Program on Tuberculosis.—The Kansas Tuberculosis and Health Association in cooperation with the Kansas State Board of Health and the committee on the control of tuberculosis of the state medical society will sponsor an educational program on the control of tuberculosis, April 18-22. Lectures will be delivered before professional and lay audiences, the speakers to be Drs. Paul A. Teschner, Chicago, assistant director, Bureau of Health and Public Instruction, American Medical Association, and Hyman I. Spector, chief of the chest clinic and instructor in internal medicine, St. Louis University School of Medicine, St. Louis. Dr. Teschner will address the profession on "Cases, Contacts and Cooperation" and lay audiences, "Fighting Tuberculosis to a Finish." Dr. Spector, as the clinical speaker, will discuss subjects pertaining chiefly to the early diagnosis of pulmonary tuberculosis. Tentative dates and places of meetings are Leavenworth April 18, Ottawa April 19, Parsons April 20, Wichita April 21 and Russell April 22. It is planned to hold the sessions for the public in the afternoons, when the film "Behind the Shadows" will be shown.

LOUISIANA

Shell Oysters Must Be Tagged.—In accordance with a recently revised federal law, the Louisiana State Board of Health ordered that after March 1 all shipments of shell oysters without identification tags be stopped. The purpose of the tagging is to facilitate the tracing of oysters to the bedding grounds where they are grown in case they cause any illness when eaten. Tags may be obtained by the oyster fishermen from the dealers to whom they ship.

Sentenced for Posing as Physician.—D. T. Garrison, Meridian, Miss., was sentenced by Judge Ben C. Dawkins in federal court, Shreveport, March 2, to serve three years in the El Reno, Okla., federal penitentiary when he was found guilty of posing as a government physician, according to the Shreveport *Times*. Garrison is said to have defrauded Negroes of DeSoto Parish by selling them a concoction which he claimed was a medicine of "great curative powers." The mixture was said to contain aloes and peppermint, which Garrison sold in bottles at $4.50 each, making a profit of $4.35 on each sale. The testimony disclosed that Garrison claimed to be a chiropractor, stating that he received a diploma from a chiropractic school in Chicago twenty-three years ago.

MASSACHUSETTS

Society News.—Dr. John T. B. Carmody, among others, addressed the Worcester District Medical Society March 9 on "Indications for Surgical Intervention in Head Injuries."—— The Brookfield Medical Club was addressed March 16 by Dr. George L. Schadt, Springfield, on "Modern Laboratory Technic for the Practicing Physician."——Dr. Joseph C. Aub, Boston, discussed "Endocrine Disorders of Childhood" before the New England Pediatric Society February 25.—— At a meeting of the Harvard Medical Society, Boston, March 8, Dr. John P. Peters, New Haven, Conn., spoke on "Exchanges Between Cells and Interstitial Fluid."——The New England Heart Association was addressed February 28 in Boston, among others, by Drs. Burton E. Hamilton on "Prognosis of Adult Women with Mitral Stenosis" and Lewis M. Hurxthal, "Congestive Failure on Using Digitalis."

MICHIGAN

Personal.—Dr. Reuben J. Harrington, Muskegon, has been appointed health officer of Muskegon County.——At a meeting of the Dickinson-Iron County Medical Society in Crystal Falls, February 9, Dr. Joseph A. Crowell, Iron Mountain, was made a member emeritus and Dr. Edward P. Lockhart, Norway, an honorary member.—— Dr. Luther Peck, health officer of Plymouth, was presented with the community service award by the Rotary Club of Plymouth, February 25, in recognition of his thirty-five years' service to the city. Dr. Peck has been health officer since 1935 and also held the position many years ago.

Annual Clinic.—The Ingham County Medical Society will hold its annual clinic at the Hotel Olds, Lansing, April 28. The following will participate:

Dr. Henry G. Poncher, Chicago, Clinical Implications of Recent Advances in Nutrition in Infancy and Childhood.
Dr. Edward H. Rynearson, Rochester, Minn., Protamine Insulin.
Dr. James M. Pierce, Cincinnati, The Management of Abnormal Labor.
Dr. Frederick Christopher, Evanston, Ill., Diagnosis and Treatment of Right Lower Quadrant Lesions.

Mr. C. O. Otto, secretary, Lansing Chamber of Commerce, will be the toastmaster at the annual banquet and Dr. Frederick A. Coller, Ann Arbor, the speaker.

NEBRASKA

Society News.—At a meeting of the Third Councilor District in Pawnee City recently the speakers included Drs. Raymond L. Traynor, on "The Diarrheas"; William J. McMartin, Omaha, "Use of Sulfanilamide in Urinary Tract Infections," and Frank P. Murphy, Omaha, "Management of Occiput Posterior Presentation."—— The Southwest Medical Society met February 12 in McCook, with the following speak-

ers, all of Omaha: Drs. Herbert H. Davis, on "Endocrinology Related to Physiology"; Frank Lowell Dunn, "Treatment of Arthritis," and Abram E. Bennett, "Prevention of Neurosyphilis."——Clarence C. Little, Sc.D., Bar Harbor, Maine, addressed the Omaha-Douglas County Medical Society, March 10, on "The Cancer Problem."

NEW JERSEY

State Society President Honored. — Dr. William G. Herrman, Asbury Park, president of the Medical Society of New Jersey, received a medal of honor from Rutgers University, New Brunswick, at a ceremony on Alumni Day February 22. Dr. Herrman graduated from Rutgers in 1912. The president of the university, Robert C. Clothier, Litt.D., paid tribute in his citation to Dr. Herrman's services, both to the university and to the medical profession.

NEW YORK

Personal.—Dr. Evelyn F. H. Rogers, Bedford Hills, has been appointed epidemiologist-in-training in the state department of health and after a year's study will be assigned to the division of maternity, infancy and child hygiene.

Society News.—Dr. James J. Short, New York, addressed the Dutchess County Medical Society, February 9, on "Studies in Obesity."—— Dr. Frederick A. D. Alexander, Albany, addressed the Montgomery County Medical Society February 16 at Amsterdam on "Use of Common Depressant Hypnotics for Preanesthesia and Postanesthesia."——At a meeting of the Niagara County Medical Society, February 8, Dr. Clayton W. Greene, Buffalo, spoke on "What Can We Do for Angina Pectoris and Coronary Occlusion?"——A group of pathologists met in Albany February 26 to organize the New York State Society of Pathologists.

Typhoid Carriers Under Supervision.—The state department of health recently reported that 398 typhoid carriers are now under supervision in upstate New York, exclusive of those in state institutions, eighteen more than the number reported for 1936. During the year forty-three carriers were added to the list and thirty were removed. Twenty-nine were discovered through epidemiologic study of outbreaks or sporadic outbreaks. Of those removed from the list, twelve died and ten moved from the state. Seven were released after submitting the required number of negative specimens. Three outbreaks during 1937 were traced to previously unrecognized carriers.

New York City

Long Island Alumni Meeting.—The Alumni Day of Long Island College of Medicine will be held April 30 at the college and hospital. Dr. Albert F. R. Andresen will speak on "Gastrointestinal Carcinoma" and Capt. Richard C. Holcomb, U. S. Navy, "The Evolutionary Perspective of Syphilis." The annual dinner will be held at the Columbus Club, with Mayor Frank Hague of Jersey City as the speaker.

Conference on Tuberculosis.—The fourteenth clinical session of the Tuberculosis Sanatorium Conference of Metropolitan New York will be held April 13 at Cornell University Medical College. The speakers will be Drs. Emmanuel W. Billard, on "Hematogenous Tuberculosis"; Clara Regina Gross, "Postinstitutional Supervision of Cases"; Arthur B. Robins, "Mass Case Finding," and Herbert R. Edwards, "Tuberculosis Program of the Department of Health."

Third Teaching Health Center Opened.—The Kips Bay-Yorkville Health Center, the third of five to be operated by the city in conjunction with the five medical schools of the city, was opened March 16. Speakers at the ceremonies were Mayor La Guardia, Dr. John L. Rice, health commissioner, Dr. Livingston Farrand, president emeritus, and Edmund Ezra Day, Ph.D., president of Cornell University, with which the new center will be affiliated. The four story building was built with PWA funds at a cost of $314,000, and the site was made available to the city by the Rockefeller Foundation and the Milbank Memorial Fund.

Dr. Keyes Awarded the Snow Medal.—Dr. Edward L. Keyes, professor of clinical surgery, Cornell University Medical College, received the first William Freeman Snow Medal for distinguished service in the field of social hygiene at the annual dinner of the American Social Hygiene Association February 3 at the Hotel Astor. This award was established at a testimonial dinner Oct. 1, 1937, to Dr. Snow, general director of the American Social Hygiene Association. Dr. Keyes was president of the association from 1923 to 1935. He was graduated from Columbia University College of Physicians and Surgeons in 1895 and has been a teacher of urology at Cornell since 1904, except 1910-1911, when he was professor of urology at Bellevue Hospital Medical College. He has been president of the American Association of Genito-Urinary Surgeons, American Urological Association and the International Urological Association.

NORTH CAROLINA

Tumor Clinic at Wake Forest.—The cancer committee of the Medical Society of North Carolina will sponsor a tumor clinic at the Wake Forest College School of Medicine, Wake Forest, April 14-15. The speakers will be Drs. Charles F. Geschickter, Baltimore; J. Grafton Love, Rochester, Minn., and Max Cutler, Chicago.

Pneumonia Control Commission. — The North Carolina State Board of Health, with the cooperation of the Medical Society of North Carolina and the Duke University School of Medicine, has established a pneumonia commission with Dr. Hubert B. Haywood, Raleigh, as chairman. One of its first activities was a week of laboratory instruction for technicians of the state at Duke University in January, attended by more than sixty technicians.

Society News. — Dr. B. B. Vincent Lyon, Philadelphia, addressed the Rowan County Medical Society, Salisbury, February 3, on "Diagnosis and Medical Management of Gallbladder Diseases."——Dr. Wingate M. Johnson, Winston-Salem, N. C., addressed the Guilford County Medical Society, Greensboro, February 3, on "Osteomyelitis and Staphylococcus Septicemia."——Dr. Wilson Pendleton, Asheville, addressed the Buncombe County Medical Society, Asheville, January 17, on "The Allergic Patient."——Drs. Forrest D. Edwards, Lawndale, and Lawrence M. Fetner, Lenoir, addressed the Catawba Valley Medical Society, Hickory, January 13, on "Pneumonia" and "Superficial Roentgen Therapy, Its Uses and Abuses," respectively.

OHIO

Society News. — Dr. Emmerich von Haam, Columbus, addressed the Montgomery County Medical Society, Dayton, February 18, on "Diagnosis of Venereal Lesions."——Dr. Jennings M. King, Pittsburgh, addressed the Columbiana County Medical Society, Lisbon, February 8 on "Arthritis with Special Attention to Orthopedic Treatment."——Dr. William W. Weis, Piqua, addressed the Miami County Medical Society in Troy February 4 on cancer of the breast.——Dr. Miles Tischer Hoerner, Dayton, was the speaker at a meeting of the Preble County Medical Society, Eaton, February 16, on diagnosis and treatment of jaundice.——Dr. Harry V. Paryzek, Cleveland, discussed "Dangers of Socialized Medicine" before the Lorain County Medical Society, Elyria, February 8.——Dr. Harold C. Weisenbarger, Lima, addressed the Mercer County Medical Society, Rockford, February 17, on "Kidneys and Their Diseases."

OKLAHOMA

Graduate Course in Obstetrics.—The committee on postgraduate teaching of the Oklahoma State Medical Association has arranged a course in obstetrics to be given throughout the state. There will be ten lectures and clinics lasting two hours once a week. Dr. Edward N. Smith, Jersey City, N. J., will be the instructor. Financial assistance has been furnished by the Commonwealth Fund and the state department of health. The fee will be $5 for the course.

PENNSYLVANIA

State Tuberculosis Meeting. — The forty-sixth annual meeting of the Pennsylvania Tuberculosis Society was held in York, February 15-16. At a special medical session the speakers were Homer L. Sampson, D.Sc., Saranac Lake, N. Y., on "Place of the Roentgen Ray in Tuberculosis" and Dr. James Burns Amberson Jr., New York, on "Pneumothorax." Dr. William Devitt, Allenwood, was elected president.

Philadelphia

Society News.—Among speakers at a meeting of the Philadelphia Pediatric Society, March 8, were Drs. Thomas A. Shallow, on "Foreign Bodies in the Intestinal Tract of Children"; David M. Davis, "Results in Treatment of Pyelitis Resistant to Medical Management," and John W. Holmes, "Summary of Results in Treatment of Gonorrheal Vaginitis with Sulfanilamide."—— Drs. William Edward Chamberlain and Temple S. Fay, among others, addressed the Philadelphia Urological Society, February 28, on "Pyelovenous Backflow"

and "Role of Suprapubic Cystostomy in Cord Bladder" respectively.——Dr. Warfield T. Longcope, Baltimore, delivered the nineteenth Nathan Lewis Hatfield Lecture of the College of Physicians of Philadelphia, March 2, on "Pathogenesis and Treatment of Streptococcal Infection."——Speakers before the Obstetrical Society of Philadelphia, March 3, were Drs. Clayton T. Beechan, on "Postpartum Hemorrhage as a Cause of Death"; Ralph M. Tyson, "Seven Years' Study of Infant Mortality," and James P. Lewis, "Treatment of Myoma Uteri." ——At a meeting of the Philadelphia Roentgen Ray Society, March 3, Drs. Gilson C. Engel, Hans May and Robert Shoemaker presented a paper on "Use of the Two-Plane Direction and Range Finder for Internal Fixation for Fractures of the Neck of the Femur" and Dr. Jacob Gershon-Cohen, "Effect of Osmotic Changes in the Duodenum on Gastric Motility."

Pittsburgh

Annual Meeting.—Dr. Irvin Abell, Louisville, Ky., President-Elect of the American Medical Association, will address the Allegheny County Medical Society at its annual meeting and banquet April 19 at the William Penn Hotel. At the afternoon scientific session speakers will be:

Dr. Charles W. Mayo, Rochester, Minn., A Surgical Viewpoint of Duodenal Ulcer.
Dr. Udo J. Wile, Ann Arbor, Mich., Syphilis in Relation to Surgical Problems.
Dr. Chevalier Jackson, Philadelphia, Pulmonary Pathology, with Special Reference to Its Study in the Living.
Dr. Frank E. Adair, New York, Diagnosis and Treatment of Breast Tumors.
Dr. Roy W. Scott, Cleveland, Clinical Aspects of Arteriosclerosis.

Mayor Scully will be a speaker at the banquet.

TENNESSEE

State Medical Meeting at Nashville.—The one hundred and fifth annual meeting of the Tennessee State Medical Association will be held in Nashville April 12-14, with headquarters at the Noel Hotel. Guest speakers are announced as follows:

Dr. James W. Bruce, Louisville, Ky., Behavior Problems in Children.
Dr. Gershom J. Thompson, Rochester, Minn., Transurethral Prostatectomy.
Dr. John Zahorsky, St. Louis, The Newborn Baby in the Hospital.
Dr. Arthur W. Erskine, Cedar Rapids, Iowa, Modern X-Ray Treatment.
Dr. H. Earle Conwell, Birmingham, Ala., The Internal Fixation of Fractures of the Neck of the Femur.
Dr. Frank E. Whitacre, Chicago and Memphis, Treatment of the Nonconvulsive Toxemia of Pregnancy.

At an evening meeting Dr. Irvin Abell, Louisville, President-Elect of the American Medical Association, will deliver an address on "Medicine and the Changing Social Order" and Dr. George C. Williamson, Columbia, will deliver his address as president of the state association. A symposium on traumatic cases has been arranged in cooperation with the section on railway surgery with the following speakers: Drs. William J. Sheridan, Chattanooga; Jarrell Penn, Knoxville; George K. Carpenter, Nashville, and Willis C. Campbell, Memphis. A symposium on sulfanilamide will be presented by Drs. Jefferson C. Pennington and Eugene Orr, Nashville, and Gilbert J. Levy, Memphis. The Tennessee Academy of Ophthalmology and Otolaryngology will hold its meeting Monday April 11 with Dr. Walter I. Lillie, Philadelphia, as its guest speaker on "Neurologic Phases of Ophthalmology." The Tennessee State Pediatric Society will meet in the morning of April 12 and in a joint session with the medical association in the afternoon.

TEXAS

State Tuberculosis Meeting.—The Texas Tuberculosis Association will meet in El Paso April 15-16. Guest speakers will include Drs. Jay Arthur Myers, Minneapolis, president of the National Tuberculosis Association; Lewis J. Moorman, Oklahoma City, and Mr. Holland Hudson, director of rehabilitation of the national association.

Society News.—A symposium on carcinoma was presented at a meeting of the Dallas County Medical Society, Dallas, March 10, by Drs. Ozro T. Woods, who spoke on "Carcinoma of the Fundus"; Charles L. Martin, "Carcinoma of the Cervix," and Harold A. O'Brien, "Genito-Urinary Complications of Cancer of the Uterus."——At a recent meeting of the Bexar County Medical Society, San Antonio, the speakers, all of the staff of Fort Sam Houston Hospital, were Lieut. Col. Patrick S. Madigan, on "Neuronitis: General Polyneuritis"; Major Harry A. Bishop, "Congenital Heart Disease," and Col. Shelly U. Marietta, "Pulmonary Abscess."——Dr. Taylor C. Walker, Beaumont, addressed the Hardin-Tyler Counties Medical Society in Kountze in February on "Differential Diagnosis of Pain in the Region of the Heart."——Drs. Thomas B. Bond, Fort Worth, and Bain Leake, Gladewater, addressed the Gregg County Medical Society in February on "X-Ray Therapy in Pneumonia" and "Syphilis of the Central Nervous System" respectively.——At the February meeting of the Kaufman County Medical Society in Kaufman the speakers were Drs. Thomas H. Cheavens, Dallas, and William P. Philips, Greenville, on "Treatment of Neurosyphilis" and "Lacerations of the Face and Scalp" respectively.

WISCONSIN

New Officers of State Board.—Dr. William W. Kelly, Green Bay, was recently chosen president-elect of the state board of health and Dr. John J. Seelman, Milwaukee, became president. Dr. Joseph Dean, Madison, was elected vice president.

Personal.—Dr. Francis P. Daly, Chippewa Falls, deputy state health officer, was the guest of honor at the annual meeting February 11 of the Old Settlers' Association in Reedsburg, where he practiced from 1897 to 1931.——Dr. Margaret E. Hatfield, Janesville, has been appointed health director of Rock County as part of an enlarged health program made possible by a federal grant of $5,800. Dr. Hatfield has been serving part time in this position.

Society News.—Dr. Foster L. McMillan, Chicago, addressed the La Crosse County Medical Society, recently, on "Regional Enteritis."——Dr. William S. Middleton, Madison, addressed the Outagamie County Medical Society, Appleton, recently, on "Advances in Treatment of Pneumonia."——Dr. Eben J. Carey, Milwaukee, addressed the Rock County Medical Society, Beloit, recently, on "Role of the Doctor in Health Education of the Public."——A symposium on "Diseases of the Eye, Ear, Nose and Throat as They Relate to General Practice" was presented before the Medical Society of Milwaukee County, Milwaukee, March 11, by Drs. Edward R. Ryan, Ferdinand H. Haessler, Earl W. Martens and Mark J. Bach.

GENERAL

President Proclaims April Cancer Control Month.—President Roosevelt, pursuant to a joint resolution of Congress, issued a proclamation March 28 designating April as "Cancer Control Month" and inviting governors of states, territories and possessions of the United States to make similar proclamations. The proclamation invites the medical profession, the press and all agencies and individuals interested in a national program for control of cancer by education and other cooperative means to unite during April in a public dedication to such a program and in a concerted effort to impress the people of the nation with its necessity.

Association on Mental Deficiency.—The sixty-second annual convention of the American Association on Mental Deficiency will be held in Richmond, Va., April 20-23, with headquarters at the Hotel Jefferson. Among the speakers will be:

Dr. Edward J. Humphreys, Thiells, N. Y., The Field of Psychiatry in Relation to the Work of State Schools.
Drs. Henry M. Pollock and George Levene, Boston, Relation of Pituitary Function to Normal and Abnormal Mental States as Revealed by Roentgenograms of the Skull.
Dr. Clemens E. Benda, Wrentham, Mass., Studies in the Endocrine Pathology of Mongoloid Deficiency.
Dr. Bronson Crothers, Boston, Birth Injuries and the Illnesses of Infancy in the Etiology of Mental Deficiency.
Dr. Arnold L. Gesell, New Haven, Conn., A Behavior Study of Birth Injury.
Dr. James N. Williams, Richmond, Emotional Education of Children.
Dr. William B. McIlwaine III, Petersburg, Va., The Correlation Between the Pediatrician, the Psychiatrist and the Psychologist.

Dr. Harry C. Storrs, superintendent of Letchworth Village, Thiells, N. Y., is president of the association and will deliver his official address at a dinner Friday evening April 22.

Physicians and Hospitals Defrauded.—A Kansas City physician recently reported a case of fraud perpetrated by a man apparently suffering from angina pectoris, which he said resulted from an alcoholic spree. He asked to be taken to a Catholic hospital, stating that he was heavily insured in the "North American Electrical Engineers," which would take care of all expenses. He said he was an electrical engineer, graduated from Notre Dame University. According to his story, he had received a shock of "30,000 volts of electricity" while working in Mexico eight years before. This accident had caused serious cardiac damage, which had made him virtually an invalid for three years. Examination revealed a loud diastolic murmur, blood pressure of 150/50 and cardiac (or aneurysmal) enlargement, the physician reported. The excessive pain was relieved

with amyl nitrite and during the time the man was in the hospital he consumed large quantities of pantopon, dilaudid and atropine. He said that he had an aneurysm and had had syphilis. After a week of treatment in the hospital he produced no evidence of money or insurance policies and worked a ruse to escape. A woman who was with him at first was said to have gone to Joplin, Mo., and several telephone calls to Joplin were charged to the hospital. Altogether he incurred obligations of about $250 and paid nothing. He gave his name as J. T. Satterlee and was also known as Adams.

First International Health Broadcast May 2.—A half hour radio broadcast between England and the United States on rheumatic heart disease will be heard over the National Broadcasting Company Red Network, May 2 at 7:30 p. m., eastern daylight saving time, as an observance of May Day-Child Health Day. The program, said to be the first international broadcast on a health problem, was arranged by the American Heart Association and Irvington House, a convalescent home for children with heart disease at Irvington-on-Hudson, N. Y. Lord Horder, physician-in-ordinary to King George VI, will open the radio conference, speaking from London on public health aspects of the disease. Dr. William J. Kerr, San Francisco, president of the American Heart Association, will tell of the work of that association in this field. Then from Atlantic City, N. J., Drs. Homer F. Swift, New York, and Thomas Duckett Jones, Boston, will speak on investigations on the cause of the disease and on treatment of children with rheumatic heart disease, respectively. The members of the committee that has arranged this broadcast are Drs. Arthur C. DeGraff, New York; Edwin P. Maynard Jr., Brooklyn; James G. Carr, Chicago; Thomas Duckett Jones, Boston; Harold M. Marvin, New Haven, Conn.; William D. Stroud, Philadelphia; Miss Gertrude P. Wood, of the American Heart Association, New York; Mrs. Edwin H. Koehler of Irvington House, and Dr. Kerr.

Fiftieth Anniversary of Anatomists.—The American Association of Anatomists will celebrate the fiftieth anniversary of its founding at its annual meeting at the University of Pittsburgh April 14-16. The anniversary will be observed with a special program presented by former presidents of the association as follows:

Dr. Ross G. Harrison, New Haven, Conn., Factors Concerned in Development of the Ear.
Dr. Robert R. Bensley, Chicago, Plasmosin: An Important Constituent of Protoplasm.
Dr. Clarence M. Jackson, Minneapolis, Nature of Abnormally Rapid Increase in Body Weight Following a Period of Growth Suppression.
Dr. Florence R. Sabin (with Dr. Austin L. Joyner), New York, Tuberculous Allergy Without Infection.
Dr. George L. Streeter, Baltimore, Origin of the Gut Endoderm in Macaque Embryos.
Dr. Charles R. Stockard, New York, Structural Disharmony: The Genetic and Developmental Independence of the Upper and Lower Jaws.

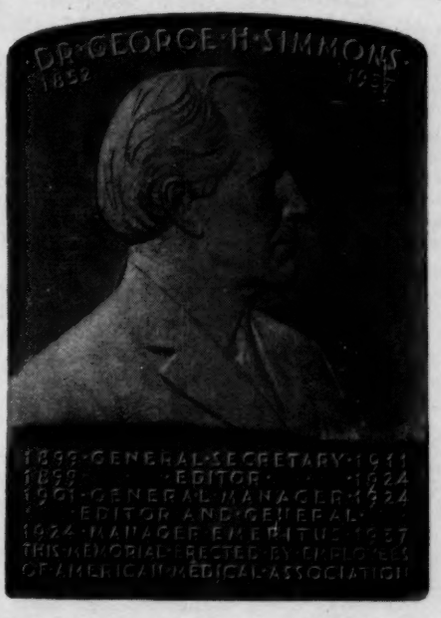
Included on the program of more than 200 papers are the following:

Dr. Eben J. Carey, Milwaukee, Experimental Histology of Nerve Fibers.
Raymond C. Truex, M.S., Minneapolis, Changes in the Semilunar Ganglion Referable to Senescence in Man.
Dr. Patrick Alexis Martin Francis FitzGerald, Waterford, Ireland, Developmental Problem Presented by the Brain of a Mentally Defective Child.
Drs. George N. Papanicolaou and Emil A. Falk, New York, Production of General Muscular Hypertrophy by the Androgenic Hormone.
Carl R. Moore, Ph.D., Jule K. Lamar, B.S., and Naomi Beck, A.B., Chicago, Effectiveness of Sex Hormones Administered as Skin Ointment.

This meeting will be in conjunction with the annual meeting of the American Association of Physical Anthropologists.

Conference of State and Provincial Health Authorities.—The annual Conference of State and Provincial Health Authorities of North America with the U. S. Public Health Service will be held in Washington, D. C., April 9-11. The meeting will open with a symposium on "Recent Extension and the Future of Medical and Public Health Services," with the following speakers: Drs. Thomas Parran, surgeon general, U. S. Public Health Service; Ralph C. Williams of the Service; Frederick W. Jackson, Winnipeg, deputy minister of health for Manitoba, and Rosco G. Leland, Chicago, director, Bureau of Medical Economics, American Medical Association. Sunday will be devoted to committee work and in the evening there will be a dinner at the Hotel Willard in honor of members with more than twenty-five years' service, as follows: Drs. Cornelius A. Harper, Madison, Wis.; Thomas R. Crowder, Chicago; Henry E. Young, Victoria, B. C.; James A. Hayne, Columbia, S. C.; Frederick E. Trotter, Honolulu, Hawaii; Arthur T. McCormack, Louisville, Ky.; Charles F. Dalton, Burlington, Vt.; William F. Cogswell, Helena, Mont.; John A. Ferrell, New York, and Theodore B. Beatty, Salt Lake City. At Monday's session committees will report and there will be addresses by Drs. Earl B. McKinley, Washington, on "The Cartography of Disease in the United States" and Bolivar J. Lloyd, U. S. Public Health Service, retired, "The Role of Viscerotomy in the Control of Yellow Fever." Dr. Robert H. Riley, Baltimore, is president of the conference.

Memorial Tablet to Dr. Simmons.—Reproduced on this page is a photograph of a bas relief showing the likeness of the late Dr. George H. Simmons. The tablet is erected by the employees in the headquarters office of the American Medical Association who wished to establish a permanent memorial in honor of Dr. Simmons. The bas relief is the work of Mr. C. Warner Williams, well known sculptor of Chicago, and will hang in the reception room on the first floor of the headquarters building where visitors will have an opportunity to see it. In this reception room there is a bust of Dr. Nathan Smith Davis, founder of the American Medical Association, and photographs relating to the historical development of the Association and its work. The new edition of "Medical Writing" which will shortly be released (Dr. Simmons was co-author with Dr. Morris Fishbein of the first edition) is dedicated to Dr. Simmons and contains a full page reproduction of the bas relief. Dr. Simmons, who died Sept. 1, 1937, was associated with the American Medical Association as general secretary, editor and then as editor and general manager for twenty-five years.



Government Services

Annual Report of the Surgeon General of the Army

Automobile accidents, the leading cause of death in the U. S. Army since 1930, again led the list during the calendar year 1936 with 105 deaths, according to the annual report of the surgeon general. This was the highest number in a decade, the previous high being ninety-two in 1931; the number reported in 1935 was sixty-six. Of the total, thirty-eight deaths were attributed to collisions; in twenty-five cases the cause was listed "struck by automobile"; in fourteen "car overturned" and in six the car had crashed into objects off the road. There were 1,539 admissions to sick report for automobile injuries. Suicides and airplane accidents occupied the second and third places in the list of causes of death, as they did in 1935, with totals of sixty and fifty-eight, respectively.

The first disease to appear on the list was pneumonia, fourth in the list of causes with thirty-six deaths; this is the first year since 1934 that pneumonia has been first. Cancer and other malignant diseases follow pneumonia with thirty-four deaths; sixth on the list is tuberculosis with thirty-one. Disease of the coronary arteries and angina pectoris, which led the list of diseases for 1935 with forty fatalities, caused twenty-six in 1936.

There were 664 deaths among army personnel in 1936, of which 330 were caused by disease, 334 by injuries. The death rate was 4.03 per thousand, compared with 3.84 for 1935.

The leading causes of admission to sick report in 1936 were bronchitis 4,761, influenza 4,490, athletic exercises 4,378, acute tonsillitis 3,829, and gonorrhea 3,726. In 1935 athletic injuries accounted for the largest number (4,046). The total number of admissions for 1936 was 104,379.

During the year there were 1,835,370 days' absence from duty, a daily noneffective rate of 30.5 per thousand of strength. Syphilis and gonorrhea accounted for 14 per cent of the time

lost in 1936; injuries incurred through athletics, automobile accidents and falls for 10 per cent. The average time lost from duty per patient was 17.6 days, compared with 16.6 in the previous year. Gonorrhea was responsible for 196,168 days; athletic exercises were second with 66,509, and tuberculosis third with 61,948. To dementia paralytica was attributed the largest amount of time lost per case (241.3 days). Tuberculosis, which led this list the four previous years, was second with 223.6. Dementia praecox was third with 108.3 and cancer fourth with 108.1.

Influenza was more prevalent than for several years, with an admission rate of 27.3, compared with 19.9 in 1935; pneumonia with 590 cases (an admission rate of 3.6) was also more frequent than in the previous four years. There were 5,919 admissions for venereal disease in 1936, including nineteen cases of venereal lymphogranuloma; the number of admissions in 1935 was 5,010.

The surgeon general reports 1,235 cases of malaria during 1936, of which 532 were in Panama, 486 in the United States and five each in the Philippine Islands, Hawaii and China. There were 413 cases of dengue fever compared with 193 in 1935; 90.8 per cent were in the Philippines. There were four cases of typhoid, all in the Philippines; all these patients recovered.

Among unusual diseases reported for a few cases each were typhus six, lethargic encephalitis four, yaws eleven, undulant fever three, beriberi one, epidemic cerebrospinal meningitis thirty-two, poliomyelitis one, tularemia three, Rocky Mountain spotted fever two, leishmaniasis one.

The report shows 1,679,492 days of treatment in hospitals and quarters for the regular army; 1,858,744 for other persons, including Veterans' Administration, Soldiers' Home, National Guard, Officers' Reserve Corps, Reserve Officers' Training Corps, Citizens' Military Training Camps, Civilian Conservation Corps and other civilians. Outpatients for the year numbered 1,473,190 and the treatments received 2,715,325. There were 521,403 physical examinations and 372,846 vaccinations.

The average daily strength of the army in 1936 was 164,654, an increase of 22,086 over 1935. The average officer strength was 11,723. During the year seventy officers, twenty-three nurses and 2,247 enlisted men were separated from the service on account of disability. The discharge rate for the total army was 14.1 per thousand, as compared with 14.6 in 1935. As for more than ten years (except in 1934), dementia praecox was the leading cause of discharge; there were 248 cases. Tuberculosis, which led in 1934, was second in 1936 with 179 cases; tuberculosis was in third place in 1935. Pes planus was third with 167 for 1936; it was fourth in 1935 as a cause of discharge. Thirty-one officers and 840 enlisted men were invalided home from foreign posts, 813 because of disease and fifty-eight because of injuries. Nervous and mental diseases were the leading causes for invaliding home of patients.

The Army Medical Library celebrated its one hundredth anniversary Nov. 16, 1936. This library now has more than 400,000 volumes with approximately a million items including pamphlets, theses and similar material. During 1936 it added 3,813 bound volumes and 404 unbound volumes. It receives 1,825 periodicals. The second volume of the fourth series of the Index Catalogue, that for the letter B, was completed and issued in May 1937.

At the Army Medical School a new vaccine laboratory was finished in the fall of 1936 and a project on typhoid vaccine has been completed.

Two new registries were added during 1936 to the American Registry of Pathology maintained at the Army Medical Museum: the tumor registry sponsored by the American Society of Clinical Pathology and the dermatologic register sponsored by the American Dermatological Society. Practically all fields are now covered in the registry except neuropathology.

CORRECTION

Sodium Chloride Tolerance in Chronic Nephritis.—In the abstracts of papers and discussions presented before the Central Society for Clinical Research in THE JOURNAL, March 12, page 841, in Dr. M. Herbert Barker's discussion, the sentence, "I believe that the sodium injury is associated with sodium retention" should read: "It appears that there are certain cases of renal injury which are associated with sodium retention and intoxication." The last sentence in this discussion should read: "When patients in the second half of life are subjected to surgical operation and receive from three to eight liters of salt solution a day or from twenty-seven to seventy-two grams of salt, there is grave danger."

Foreign Letters

LONDON

(From Our Regular Correspondent)

March 12, 1938.

Air Raid Precautions

The government has issued the Householder's Handbook on Protection against Air Raids. It is desired to ascertain the views of the local authorities on the book in its present form. Among the contents are simple directions for preparing a refuge room in any type of dwelling, explanations of the purpose and use of a respirator and an outline of precautions against fire. In a preface Sir Samuel Hoare, home secretary, emphasizes the importance of householders cooperating in the defense against air raids. "Every home should have a refuge specially prepared in which the whole household could take cover in greater safety. Begin to collect materials for gas protecting your refuge room; materials for darkening your whole house: the things you need in your refuge room." To prepare a refuge room against entry of gas, any cracks or openings must be sealed up. Window frames must be sealed with gummed strip or pasted paper. To seal a door a piece of wood, padded with felt, should be nailed to the floor, so that when closed the door presses tightly against it. A blanket should be fixed outside the door if the door opens outward, inside the door if it opens inward. If warning is received of the approach of hostile aircraft, all windows and doors should be closed, fires in grates extinguished, gas jets turned off and the bath filled with water as a supply in case of fire.

High Voltage Roentgen Therapy of Exophthalmic Goiter

At the Royal Society of Medicine, Drs. E. P. Poulton and W. L. Watt, physician to Guy's Hospital and surgeon in charge of the high voltage roentgen therapy department, respectively, demonstrated thirty patients who had suffered from exophthalmic goiter and had been cured or received benefit from high voltage roentgen therapy. The use of x-rays in this disease began soon after their discovery but the technic was defective and the only effect was to burn the skin without producing any change in the gland. Drs. Poulton and Watt began to use the x-rays in 1924 and gradually found that the thyroid would tolerate heavier and heavier doses until finally the present method of high voltage therapy was adopted five years ago. One course of treatment consists of five irradiations to the thyroid: (1) right anterolateral, (2) left anterolateral, (3) right posterolateral, (4) left posterolateral and (5) whole gland direct from the front. The total depth dose is not less than 80 per cent of a skin erythema dose. The procedure depends on the severity of the disease. In young patients for whom time is not an essential factor, the first course of high voltage therapy should be sufficient to effect a cure. To the worker for whom time is important, the full course should be given as soon as possible. It is preferable for the patient to be in bed for a week or ten days during the treatment and to rest as much as possible for one month afterward. Where necessary and the work is light the patient is allowed to continue it even during treatment. In severe cases the first course should be given as soon as possible. Rest in bed for ten or twelve days is essential, with a month's complete rest afterward, if possible. Results should be assessed in three months. With marked improvement further treatment should be postponed for another three months. With moderate improvement a second full course of treatment should be given. Should the symptoms persist at the end of a year, the question of a third course or other methods should be considered. With no improvement a decision must be made between further irradiation and other treatment. In grave cases irradiation must be combined with medical treat-

ment, the primary being spread over three or four weeks, with complete rest for at least two months and further treatment as necessary.

Following Fraser's classification the results were as follows: From 55 to 60 per cent of the patients could do their former work without difficulty (class 1); from 30 to 40 per cent could do their work with difficulty or had to take a lighter job (class 2); from 5 to 10 per cent led an invalid life (class 3). At the demonstration, twenty-one of the patients (70 per cent) were in class 1 and nine (30 per cent) were in class 2. The comment was made that the pulse remained normal during the examination, when a rise might be expected from patients with exophthalmic goiter subject to such an ordeal. In the series auricular fibrillation was uncommon.

PARIS

(From Our Regular Correspondent)

March 12, 1938.

Intravenous Drip Method in Treatment of Syphilis

At the March 1 meeting of the Académie de médecine of Paris a paper was read by Dr. Arnault Tzanck in which he stated that the various preparations of arsenic which are the most active antisyphilitic agents cannot always be employed in doses as large as desirable, because of the danger of complications. The latter can be placed in three groups: 1. Late complications such as jaundice and erythrodermias, which appear after the treatment has been discontinued; they occur no matter by what route the drug was given. 2. Complications which may be called "mediate," appearing from eight to ten days after administration of arsenical preparations; they are frequently observed after a third injection in the form of an apoplexy. 3. The accidents or complications which appear immediately after an injection. These complications can be avoided by giving neoarsphenamine or similar arsenical preparations by the intravenous drip method at the rate of 0.01 Gm., at the most, per minute. A total of 4.5 Gm. can be given in three days. This mode of intensive treatment by the intravenous drip method had been previously reported by American syphilologists but Dr. Tzanck stated that he had not seen these reports at the time his own observations were being made. The first dose of 1.5 Gm. is administered in 150 cc. of physiologic solution of sodium chloride, preferably by a vein in the forearm, the injection being given over a period of from three to five hours. A total of 157 patients had been treated by this method up to March 1. The results appear to be better than those observed with any other method. The lesions disappear rapidly. Spirochaeta pallida cannot be found either in the lesions or in the lymph nodes, the day following the treatment. The Wassermann reaction is negative in two or three weeks. This observation applies especially to cases of persistently positive Wassermann reaction. Complications have not been noted in any of the cases.

Inaugural Lecture of Prof. René Leriche

Reference has been made in several recent letters to the candidacy and, later, election of the internationally known surgeon Prof. René Leriche as successor of Prof. Charles Nicolle in the chair of experimental medicine at the Collège de France. This is an institution for research in all scientific fields, which although it forms a part of the University of Paris, better known as the Sorbonne, is independent of the Faculté de médecine. It is the custom in France for a newly appointed professor to deliver an inaugural lecture in which, in addition to a eulogy of the preceding occupant of the particular chair, it is customary to treat the question of the lecturer's own view regarding the present and future of the subjects to be covered in the course. After an eloquent eulogy of his predecessor, Prof. Charles Nicolle, the bacteriologist, the immediate objectives of modern surgery were discussed by Professor Leriche.

The first subheading was the endocrine aspect of postoperative complications. The problem of what really transpires after an operation still requires investigation. All our internal mechanism is dominated by endocrine action; hence the patient's emotions prior to a surgical procedure, especially in the case of those who dread it, can be measured by a rise of blood pressure during the initial steps, as the result of increased adrenal activity. It is not only prior to and during an operation but also after it that endocrine factors must be taken into consideration. The second question which requires further study is that of the process of healing of wounds. The role of the various connective tissue elements, ever ready to respond to a call for aid, is a most important one in modern surgery. There is some unknown physiologic impulse which determines that bone defects following operations should be repaired by new bone formation or other action. This is true also of most of the differentiated tissues of fibrous origin. A third field for further research is the mechanisms of pathologic changes. The origin of many diseases still remains a dark chapter despite intensive studies. Every tissue lives its own life, otherwise anarchy would result in the human body. The study of our defensive mechanisms has been almost entirely limited to diseases of bacterial origin. More ought to be known about those due to nonbacterial causes, such as injuries. Changes which are primarily the result of physiologic abnormality are responsible for many lesions. Recent experimental studies have shown that stimulation of the sympathetic, i. e., vasoconstriction, gives rise to leukopenia and that paralysis of the sympathetic, i. e., acute hyperemia, to a polynucleosis. If the sympathetic is blocked with procaine hydrochloride in the vicinity of a traumatism, an incipient infection can be aborted. The surgical physiology of the sympathetic nervous system offers an endless number of problems for study.

BERLIN

(From Our Regular Correspondent)

Feb. 21, 1938.

Insurance for Physicians

The National Chamber of Physicians has just created a new insurance organization primarily destined to aid doctors and their families who, as the result of location, have not heretofore been able to obtain similar benefits. In some sections of Germany, to be sure, the superannuated practitioner and the surviving relatives of a deceased practitioner have for many years been legally protected against want. The newly organized insurance is governed by the following provisions:

The National Chamber of Physicians and several insurance societies have concluded agreements with respect to the types of insurance (life insurance, disability insurance, old age annuities and so on) which are to be made available to medical men under the new system. In general the benefits obtainable will be: life insurance (cash payment to beneficiary at death of the insured), 2,000 marks; annuity in case of total disability or superannuation, 1,500 marks (a retirement annuity begins when a man has reached the age of 64); annuity to insured's widow, 1,000 marks; annuity to child (mother living), 300 marks; annuity to completely orphaned child, 600 marks. Each child who is a direct beneficiary of the foregoing insurance will receive an annuity until he reaches the age of 21.

A special board has been appointed to administer the new insurance. Doctors registered with the various local medical boards will be expected to take out the new type of insurance; exempted from compulsory contributions, however, are doctors older than 40½ years, assistants, men who serve constantly as locum tenentes, medical officials and employed doctors who already have a legitimate claim to retirement pensions and survivor benefits. Likewise exempted are doctors who already carry a commensurate amount of life insurance and married women doctors whose husbands carry similar insurance.

Doctors who are legally exempt are permitted to participate voluntarily in the new insurance.

The amount of the premiums will be based on percentages of a practitioner's professional income; the exact scale has yet to be computed. If a doctor is over 40½ years of age, the medical professional organization makes to the insurance company a single extra payment of the amount necessary to bring the entrance age of the insured doctor down to 40½ years; the doctor then makes an extra payment to the medical organization, either in a lump sum or in instalments.

Studies of Splenic Function

Several aspects of the function of the spleen were recently discussed by Dr. Erwin Schliephake at the Berlin Medical Society. The influence of the spleen on the sympathetic nervous system can be better understood through studies of the interrelation of the spleen and the thyroid. The thyroid secretion reduces vagal irritability. Thyroidectomy is followed by greatly increased vagal irritability and a decreased irritability of the sympathicus. The author has found that, after splenectomy, phenomena produced by thyroidectomy may be in part reversed; thus is demonstrated a splenic influence on the parasympathetic system analogous to the influence exerted by the thyroid on the sympathicus. Verification of these observations was obtained by injections of splenic extract. There was an increase in sensitivity to toxins which stimulate the vagus. From studies of splenic influence on gastric function, contradictory data were at first elicited. Only after examination of a large material was any regularity of reaction discernible; superacidity depreciated the acid values, whereas subacidity increased them. Normal acid values were on the contrary scarcely influenced. It thus became possible to determine the regulatory function. In healthy subjects who received injections of splenic extract the blood sugar values were lowered, but not in equal measure; several hours after the initial decline there appeared a temporary increase, which was succeeded by a second decline; only first after from eight to ten hours had elapsed were the initial values restored. The water content of the blood was observed to undergo a similar sequence of phases; administration of splenic extract was immediately followed by a depreciation of the value (as measured by the refractometer), followed by a rise and finally a second decline. (The splenic extract used contained no protein.) According to Schliephake, the importance of the spleen in prevention of disease is attested by various phenomena: increased phagocytosis following administration of splenic extract, an impetus to the formation of antitoxin, and an increase in the cholesterol value of the blood.

BELGIUM

(From Our Regular Correspondent)

Jan. 25, 1938.

The Specialist's Diploma

The Académie royale de médecine has addressed to the minister of health the following memorial:

The Académie is thoroughly conversant with the various objections raised by certain elements of the profession to the proposed creation of a specialist's diploma. These objections have not been cogent enough to modify the stand taken by the Académie. Each of the stock objections is herewith cited and refuted; they are essentially of two kinds: objections of a juridical nature and objections that concern the modus operandi.

I. JURIDICAL OBJECTIONS

Many doctors fear that the establishment of a specialist's diploma would divide the profession, in the eyes of the laity, into two classes: "superior" doctors and "inferior" doctors. But present-day lay opinion already envisages a certain hierarchy among the medical profession; prominent specialists and doctors clothed with official functions (university professors, heads of hospital services, and so on) are popularly considered of a higher order than the rank and file of general practitioners. Therefore the specialist's diploma would after all represent merely an official acknowledgment of an already existing status quo. This legal recognition of the peculiar training required by the specializing physician would redound to his prestige and protect him against unethical competition of improperly trained, self-styled "specialists." The fear has been expressed that under the proposed regulation a practitioner who lacks the specialist's diploma might be accused of having transgressed the limits of his competence and at the same time be held responsible for some alleged injury to the patient. However, it is stated in the preamble to the bill sponsored by the Académie that the new regulation in no way restricts the activities and privileges conferred by the degree of doctor of medicine, surgery and obstetrics. The holder of this degree will retain the right to perform any ethical medical act. A patient therefore will be permitted no more grounds for action against a practitioner than he possesses under the present laws, which recognize allegations of gross ignorance, negligence or misconduct. The chief purpose of the proposed specialist's diploma is to enlighten the public.

II. OBJECTIONS WITH REGARD TO MODUS OPERANDI

Quite as vociferous as the objections on juridical grounds have been the exceptions taken to the principle of compulsory examination envisaged in the proposed regulation.

1. Principle of compulsory examination: Certain parties are pleased to claim that the final examination for the doctor's degree in medicine, surgery and obstetrics represents the ultimate official and legal certification of a practitioner's competence. Persons who reason thus should recollect that the man who acquires a special scientific title such as "special physician" or "agrégé in higher education" has to undergo tests which in many respects have the character of a formal examination. Similarly, a doctor who seeks membership in one of those scientific societies which represent the élite of the medical profession is usually required to prove himself worthy of admission by submission of an original thesis to be passed on by a committee. Even now there are certain specialist's diplomas which attest that the holders have passed a special examination. Why should not a like certification be required of the practitioner who claims to possess a particular skill in this or that medical discipline? The Académie feels that the granting of these certificates ought properly to be placed under the authority of the university medical faculties. These scholastic bodies would be empowered to determine the amount of study requisite in each specialty, to evaluate the extracurricular training, to hold the examinations of candidates and to appoint the personnel of the examining boards.

2. Alleged antidemocratic character of the proposed regulation: The point has been repeatedly made in speeches and articles that, since special medical training is as a rule available only in the larger hospitals, both university and nonuniversity of the big cities, the proposed specialist's diploma would only be accessible to doctors established in the larger centers or provided with ample financial resources. The Académie concedes the justice of this last objection but believes this inequality of opportunity can be easily obviated. It should be legally stipulated that candidates who desire to be examined in their special disciplines but who have not taken the prescribed course of study may, after a certain number of years of actual specialized practice, submit themselves to examination and on passing receive the specialist's diploma. The Académie does not seek the slightest curtailment of rights at present conferred by the degree of doctor in medicine, surgery and obstetrics, nor does it seek to deter the holder of this degree from the performance of any medical procedure whatever. The salient feature of the proposed regulation is that several years of specialized practice would be required of all candidates for the specialist's diploma.

This document will be in essence a brevet of mastery and will carry with it no other privilege than the right to use the title. To clarify its aims, the Académie makes public a condensed restatement of the resolutions passed by it in 1933. Resolved: (1) that the public authorities forbid the use of the title "specialist" by any physician not a holder of the special diploma which confers the right to this title and (2) that so far as possible the direction of the special services of those public health services whose members or clients do not enjoy free choice of physician should be reserved to the holders of the new diploma.

National Alimentation Committee

A Comité national de l'alimentation has just been created. The problem of nutrition has come to assume a new importance in Belgium from the standpoint of public health and from that of national economy. The minister of public health decided that concerted investigations of this problem were necessary. The new committee will have as its principal task the formulation of a national food policy. The committee will collaborate with all interested organizations, national and international, and with the League of Nations. It will appoint both members and nonmembers to serve on four subcommittees, the special duties of which will concern, respectively, (1) biologic studies, (2) social and statistical studies, (3) problems relative to the control of foodstuffs, and (4) education, propaganda and methods in the domain of a national food administration.

Occupational Training of Crippled Persons

The minister of labor and social prevoyance has just established an investigatory commission that is to reexamine the whole problem of occupational training for the crippled and the maimed. The commission will investigate the social destiny of persons who receive benefits from the Foundation for Crippled and Maimed Persons and persons who have not been aided by this organization. This means a comprehensive study of the problem. In particular, efforts will be made to enumerate all cases of crippling and maiming and to note whether treatment has been too hastily or too tardily initiated. Furthermore, all special vocational training schools and similar establishments will be inspected and plans for the expansion of the existing facilities and the foundation of new institutions will be studied.

BUDAPEST

(From Our Regular Correspondent)

Feb. 24, 1938.

Congress of Dwarfs in Budapest

Just as it is widely known that the center of the watch trade is Geneva, the center of the steel industry is Sheffield and the center of the fur market is Leipzig, it is just as well known that the center of Europe's dwarf market is in Budapest. All the shows of Europe and even many oversea varieties visit the Budapest market if they want dwarf artists. The dwarfs of Europe resolved to hold a congress in Budapest, to which they intend to invite all the dwarfs of the world, and here they plan to discuss the ways and means by which they can combat the general conception that dwarfs are good only for exhibition and that they are not suited to regular civilian occupations. They want to show the world that they are capable of filling all kinds of industrial and even intellectual posts. The date of the congress has not yet been set.

The Sports of the Sick Man

Dr. Daniel Kellner, a notable sports physician, said at a recent meeting of the medical society that gymnastics is the nature-given remedy for effeminacy. As every efficacious remedy has a dose which within certain limits varies according to the individual, thus also sports must be dosed even if one is dealing with perfectly healthy men, and all the more so with not wholly healthy persons, for whom modern physicians not only do not forbid participation in sports but even suggest a moderate degree of athletics. These patients perhaps need the physiologic stimuli hidden in motion rather more than vigorous and strong athletes do. Over the physical exercises of persons suffering from chronic diseases constant medical control must be applied, because only thus can physical exercises become useful and not harmful to the patient. In young persons of the asthenic type, who according to our knowledge are less resistant, physical exercise, commenced cautiously and continued with gradual increase, is the only way toward improvement. Patients suffering from valvular diseases may require moving. Terrain therapy on sloping places were known of old and were applied by physicians prior to the "sports craze." Of course in these cases medical control is implicitly necessary, because in the same subject, according to the different stages of the disease, rest is at one time required and then movement of a certain extent. In instances of compensated and balanced valvular disturbances, likewise in cases of moderate hypertension, light gymnastic exercises, outdoor games, exercises of the abdominal muscles and hunting may have a good effect. But racing or climbing means a greater effort and is conducive to high blood pressure. In metabolic disorders, such as diabetes, obesity or gout, physical exercises in gradually rising increments may prove beneficial. To get rid of excessive deposits of fat on the abdominal wall, rowing, walking, moderate running and gymnastics of the abdominal muscles are to be recommended. Of course, in addition, adequate diet and certain drugs cannot be dispensed with. In diabetes and gout moderate exercise, hunting, riding, tennis playing and rowing are recommended by prominent clinicians. For women suffering from disturbances caused by the climacteric, sports and outdoor pastimes are much to be recommended, their action being invigorating also on their minds: refreshing bodily movements have a favorable influence on the labilities of mood connected with the change.

AUSTRALIA

(From Our Regular Correspondent)

March 2, 1938.

The State and the Medical Profession in Queensland

The future of medical practice in Queensland is at the crossroads. The commonwealth government is seriously bent on national insurance with the support, in principle, of the Federal Council of the British Medical Association. The Queensland government, on the other hand, tends toward a hospitalization program. The Queensland branch of the British Medical Association has been endeavoring to counter its government's tendency by urging a scheme of its own which is based on the "lodge" system, using the existing friendly societies as an administrative basis. Into this sea of conflicting ideas was launched through the daily press, January 12, an "open letter" to medical men from the director general of health and medical services, purporting to be a request for cooperation with the Queensland government. Shortly after its appearance in the press, a questionnaire was sent to all practitioners in Queensland. They were asked to signify whether they were willing, if called on, to enroll with the department of health, for various types of hospital, insurance or preventive medical work, on a full time or a part time basis. In view of the fact that the Queensland branch of the British Medical Association has been complaining for several years that it was unable to make contact with the department of health, much less cooperate with it, the present appeal from the director general was greeted with surprise.

In September 1935 the Queensland branch of the British Medical Association published a scheme for a national medical service for the state. It was based on the provision of a general practitioner for every family. The association proposed that

the scheme would be financed by compulsory medical insurance, with government subsidy to provide for the unemployed and for chronic invalids. The association was opposed to full time nationalization on the ground that it would be detrimental to the profession and the patient. It was emphatic that the patient's right of free choice of a doctor should be preserved. The minister for health stated at the time that the scheme was vague, that it had not been supported by actuarial evidence and that the government would not commit itself without obtaining the fullest information. In February 1936 the British Medical Association asked for the establishment of a joint committee to examine, from a professional and actuarial standpoint, the policy for a general medical service. The minister's reply to this was that the association should formulate a definite scheme showing exactly what contributions would be required from the public and what benefits contributories would receive. For two years no further progress was made. Now the appeal comes from the department to the medical profession, not from the minister but direct from his professional adviser, and not through the medium of the British Medical Association but by means of the press, and by circulars to individual practitioners.

The appeal for cooperation is taken to mean that the government proposes shortly to extend its activities to the provision of public medical services. Possible inferences from the letter are (1) that the government would retain a limited number of doctors who would be wholly paid from public funds or (2) that a large number of doctors would be paid to devote part of their time to public medical service. It is not known to what extent any such scheme would be affected by the federal national insurance plans, which presumably would bear part of the cost of such a scheme. Probably by the time the commonwealth proposals can be put into effect the Queensland scheme would be well developed. The "open letter" indicated the increased demand by the poorer sections of the community for medical care and for which, under the existing system, they are incapable of paying.

It was pointed out by the *Medical Journal of Australia* that Sir Raphael Cilento, the Queensland director general of health, had taken practically the whole of his "letter" from papers read at the Philadelphia conference, February 1934, on the subject "The Medical Profession and the Public: Currents and Counter Currents." These speeches were made by men opposed to the American Medical Association because it was not prepared to approve a scheme of national insurance for the United States. The Queensland branch council of the British Medical Association advised members of the branch that they might reply in the affirmative to all the questions in the circular letter, with the proviso that acceptance is subject to the qualification that the conditions of service are satisfactory and are approved by the Queensland branch of the British Medical Association. The waters are as troubled as ever, because in spite of its high sounding phrases it did not commit the government to any future in particular. A frank round table discussion would have been a much easier method of exploring the possibilities which the future holds forth.

Fee Splitting Illegal in Victoria

A bill prohibiting composite accounts and the sharing of fees has been passed in the legislative assembly of Victoria. It is now illegal for a medical practitioner to present an inclusive account for services rendered by himself and other doctors. This practice has been the cause of complaints from the public, and the Medical Board of Victoria requested that suitable action should be taken to put an end to a method of account rendering which is open to abuse. A patient who pays an account covering the services of more than one doctor is unaware of the fees payable to the other doctor or doctors, who in turn are unaware of the fees included, on their behalf, in the composite account. This is considered unfair to the patient and contrary to the best interests of the medical profession. The bill remedies the situation by prohibiting a medical practitioner from demanding payment, presenting an account or collecting fees for professional services rendered by any other medical practitioner, except a partner, assistant in his sole employment or locum tenens, and forbids a medical practitioner to share, or agree to share, fees for professional services with any doctor other than a partner, assistant or locum tenens. Partnership agreements must be approved and registered by the medical board, to prevent the defense being raised that doctors are carrying on their profession in partnership. Sir Stanley Argyle, speaker in the assembly, supported the bill, stating that it was designed chiefly in the interests of the public to prevent its exploitation between general practitioners and specialists or between general practitioners and surgeons or consultants. At a special meeting of the Victorian Branch of the British Medical Association the opinion was expressed that the bill was unnecessary and that its effect would probably be to prejudice confidence between doctor and patient. Regret was expressed that the branch had not been given an opportunity to consider the details of the bill before it was passed. Subsequently however the meeting approved of the bill, and that approval was conveyed to the government.

Legislation for Control of Biologic Products

The commonwealth government, in the Therapeutic Substances Act of 1937, has introduced a measure of control over the preparation, import and export of biologic products. The legislation is to apply only to therapeutic serums, bacterial products and glandular extracts. No control is exercised over such more strictly chemical substances as the arsphenamines, digitalis and strophanthus. For the purpose of this act a therapeutic substance is defined as one which is "wholly or in part derived from microscopic organisms or from living cellular tissues or from glands removed from animals after slaughter." This legislation followed the conference on biologic standardization held at Geneva in October 1935, in which Australia was represented among twenty-four countries. It now standardizes the definitions of therapeutic units throughout Australia. Previously, three states had adopted the standard of the Hygienic Laboratory at Washington, while the remaining two Australian states had not accepted any standard. There is only one Australian source of therapeutic serums, the commonwealth serum laboratories. Serums of other sources are imported but they have to contend with a high tariff wall. The commonwealth laboratories have served well the demands of such products in Australia and New Zealand.

Marriages

FREDERICK WILHELM VAN BUSKIRK JR., Pottstown, Pa., to Miss Margaret Moffitt of Asheboro, N. C., in Greensboro, N. C., Dec. 29, 1937.

RUSSELL MACRAE ATCHISON, Northville, Mich., to Miss Ruth Mary Baldwin of Jonesville, in Albion, January 22.

LEIGH G. COLLINS, West Point, Neb., to Miss De Line Hettrick at Lincoln, recently.

EDWARD ARNOLD, Canton, Ohio, to Miss Melba Levy of Demopolis, January 27.

THOMAS E. WARD to Miss Evelyn Bartlett, both of Williamsport, Ind., January 19.

ABE C. FELLMAN to Miss Betty Fellman, both of Omaha, February 27.

MORTIMER M. KOPP to Miss Lillian Lux, both of Brooklyn, March 11.

HERBERT D. KUPER, Kenesaw, Neb., to Miss Marie Bay in January.

Deaths

George Henry Crabtree ⊕ Colonel, U. S. Army, retired, Sedro Woolley, Wash.; Medico-Chirurgical College of Philadelphia, 1893; veteran of the Spanish-American and World wars; entered the army as an assistant surgeon in 1901; rose through the various ranks; retired Jan. 29, 1917, as a lieutenant colonel; returned to active duty April 24, 1917, and served until 1919; retired as a colonel June 21, 1930; on the staff of the Northern State Hospital and State Narcotic Farm Colony; aged 67; died, January 16, in the Rowley Hospital, Mount Vernon.

Edwin Benjamin Ramsdell, White Plains, N. Y.; University of the City of New York Medical Department, 1878; member of the Medical Society of the State of New York; examining surgeon for pensions, department of interior, 1890-1894; assistant surgeon to the Manhattan Eye and Ear Hospital, 1881-1891; attending surgeon to the New York Nose and Throat Hospital, 1891-1900; medical officer to the New York fire department, 1895-1920; aged 81; died, January 19, of chronic myocarditis.

Grayson Emery Tarkington, Albuquerque, N. M.; University of Maryland School of Medicine, Baltimore, 1917; member of the New Mexico Medical Society; fellow of the American College of Physicians; served during the World War; on the staffs of the Children's Home and Hospital, Southwestern Presbyterian Hospital and St. Joseph Sanatorium and Hospital; aged 43; died, January 12, as the result of injury received in a fall.

James M. Smith ⊕ Valdosta, Ga.; Atlanta Medical College, 1898; member of the American Academy of Ophthalmology and Oto-Laryngology; fellow of the American College of Surgeons; past president of the Medical Association of Georgia; on the staff of the Little-Griffin Private Hospital; aged 62; died, January 8, of a malignant condition of the intestinal tract.

Arthur Brown Bisbee, Montpelier, Vt.; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1882; member of the Vermont State Medical Society; on the staff of the Heaton Hospital; for many years medical director of the National Life Insurance Company; aged 79; died, January 31, of arteriosclerosis.

Marshall Ashby Purse, St. Simons Island, Ga.; Southern Medical College, Atlanta, 1890; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1892; member of the Medical Association of Georgia; aged 71; died, January 7, at a hospital in Brunswick, of coronary thrombosis and myocarditis.

George Fisk, Montreal, Que., Canada; University of Bishop College Faculty of Medicine, Montreal, 1894; fellow of the American College of Surgeons; served during the World War; consulting surgeon to the Woman's General Hospital; aged 69; died, January 28.

Frederick John Fox, New York; University of Toronto Faculty of Medicine, 1908; formerly senior attending dermatologist to the West Side Hospital and Dispensary; aged 59; died, January 6, in the British Guiana jungle, while with a party searching for Paul Redfern, long missing American aviator.

P. Calvin Hartford ⊕ East Palestine, Ohio; Western Reserve University Medical Department, Cleveland, 1887; Jefferson Medical College of Philadelphia, 1894; past president of the Columbiana County Medical Society; on the staff of the Salem City (Ohio) Hospital; aged 75; died, January 3.

George F. Warmburg, Milwaukee; Friedrich-Wilhelms-Universität Medizinische Fakultät, Berlin, Prussia, Germany, 1891; member of the Washington State Medical Association; aged 72; died, January 19, in the Columbia Hospital, of cerebral infarction and hypostatic pneumonia.

Louis Miller, New York; Columbia University College of Physicians and Surgeons, New York, 1907; formerly adjunct professor of internal medicine at the New York Polyclinic Medical School and Hospital; aged 55; died, January 1, in Miami, Fla., of acute coronary thrombosis.

Robert Augustus Hamrick, Clay, W. Va. (licensed in West Virginia in 1903); county health officer and county coroner; chairman of the medical draft board in Clay County during the World War; at one time mayor of Clay; aged 68; died, January 27, of coronary thrombosis.

Daniel Waldo Fenton ⊕ Reading, Mich.; Detroit Medical College, 1876; formerly secretary of the Hillsdale County Medical Society; at various times mayor, member of the council and secretary of the board of education; aged 89; died, January 8, of coronary thrombosis.

Charles Louis Rudasill ⊕ Richmond, Va.; Medical College of Virginia, Richmond, 1914; medical director of the Life Insurance Company of Virginia; served during the World War; aged 47; died, January 13, in the Tucker Sanatorium, of a self-inflicted bullet wound.

Alfred Michaelis ⊕ New York; Columbia University College of Physicians and Surgeons, New York, 1898; assistant professor of otolaryngology at his alma mater; aged 63; on the staff of the Presbyterian Hospital, where he died, January 27, of angina pectoris.

E. Jones Stroud, Chicago; Loyola University School of Medicine, Chicago, 1929; member of the Illinois State Medical Society; on the staff of the Little Company of Mary Hospital, Evergreen Park, Ill.; aged 45; died, January 11, of lobar pneumonia.

Eilef A. Smedal ⊕ La Crosse, Wis.; Rush Medical College, Chicago, 1916; past president of the La Crosse County Medical Society; aged 48; on the staff of St. Francis Hospital, where he died, January 30, of pulmonary tuberculosis and diabetes mellitus.

George Homer Buffington, Decatur, Ark.; Keokuk (Ia.) Medical College, College of Physicians and Surgeons, 1900; member of the Arkansas Medical Society; formerly mayor of Gravette; bank president; aged 68; died, January 24, of heart disease.

Thomas Obadiah Senior, Nashville, Tenn.; Meharry Medical College, Nashville, 1923; professor of dermatology at his alma mater; aged 54; on the staff of the Hubbard Hospital, where he died, January 8, of chronic appendicitis and cholecystitis.

De Witt Clinton Jones, St. Paul; Trinity Medical College, Toronto, Ont., Canada, 1891; Victoria University Medical Department, Coburg, Ont., 1891; formerly county coroner; member of the Minnesota State Medical Association; aged 69; died, Dec. 23, 1937, of coronary occlusion and sclerosis.

William Fennelly McGrath, North Adams, Mass.; Baltimore Medical College, 1894; at one time city physician; on the courtesy staff of the North Adams Hospital; aged 72; died suddenly, January 24, of chronic myocarditis and nephritis.

Malcolm Morris Restall ⊕ Marblehead, Mass.; Harvard University Medical School, Boston, 1926; on the staffs of the Salem (Mass.) Hospital and the Mary Alley Emergency Hospital; aged 39; died, January 25, of coronary occlusion.

Marion Masters Ricketts ⊕ Sadorus, Ill.; Chicago College of Medicine and Surgery, 1911; on the staffs of the Burnham City Hospital, Champaign, and the Mercy Hospital, Urbana; aged 60; died, January 14, of pulmonary tuberculosis.

Robert E. Chumbley, Radford, Va.; University College of Medicine, Richmond, 1898; member of the Medical Society of Virginia; aged 64; died, Dec. 31, 1937, in the Jefferson Hospital, Roanoke, of perforated duodenal ulcer.

Eugene McEvers Van Ness, Baltimore; University of Maryland School of Medicine, Baltimore, 1891; member of the Medical and Chirurgical Faculty of Maryland; aged 69; died, January 12, of carcinoma of the pancreas.

Crandall A. Reynolds, Lincoln, Neb.; Nebraska College of Medicine, Lincoln, 1908; member of the Nebraska State Medical Association; on the staff of St. Elizabeth's Hospital; aged 57; died, January 16, of angina pectoris.

George Carr Taylor, Mentone, Ind.; Chicago College of Medicine and Surgery, 1910; member of the Indiana State Medical Association; served during the World War; aged 57; died, January 23, of cerebral hemorrhage.

Joseph Eugene Turcot, St. Hyacinthe, Que., Canada; M.B., Laval University Faculty of Medicine, Quebec, 1873, and M.D. in 1875; formerly on the staff of St. Charles Hospital; aged 87; died, Dec. 11, 1937.

Jessie Penrose Smith, Pennsville, Ohio; Ohio Medical University, Columbus, 1896; aged 72; died, January 27, in the Memorial Hospital, Marietta, of burns received when her clothing ignited from a gas grate.

Andrew J. Marberry, San Angelo, Texas; Missouri Medical College, St. Louis, 1881; member of the State Medical Association of Texas; aged 84; died, January 2, of arteriosclerosis and heart disease.

Luther A. Barnes, Huntsville, Texas; Memphis (Tenn.) Hospital Medical College, 1907; member of the State Medical Association of Texas; aged 56; died, January 27, in Apopka, Fla., of angina pectoris.

Edward Tuck Manix ⊕ Lynn, Mass.; Harvard University Medical School, Boston, 1898; formerly on the staff of the Lynn Hospital; aged 61; died, January 19, of arteriosclerosis and coronary thrombosis.

Hugh Ralph Martin, Riverside, Calif.; Creighton University School of Medicine, Omaha, 1937; intern at the University of Kansas Hospitals, Kansas City; aged 26; died, January 30, of pneumonia.

Henry T. Dixon, Evansville, Ind.; University of Louisville (Ky.) Medical Department, 1879; formerly secretary of the city board of health; aged 87; died, January 13, of cerebral hemorrhage.

Louis Jalmer Smith, Chester, Ill.; St. Louis University School of Medicine, 1903; formerly physician to the Southern Illinois Penitentiary; aged 66; died, Dec. 1, 1937, of arteriosclerosis.

Ezra Herbert Perry, Providence, R. I.; Bellevue Hospital Medical College, New York, 1870; aged 89; died, January 3, of bronchopneumonia, diabetes mellitus and arteriosclerosis.

Otis Burgess Moye, Soperton, Ga.; Atlanta College of Physicians and Surgeons, 1900; aged 62; died, January 23, in Lake Wales, Fla., of chronic myocarditis and hypertension.

Joseph M. Murray, Hollandale, Miss.; University of the South Medical Department, Sewanee, Tenn., 1901; aged 67; died, January 23, of carcinoma of the tongue and throat.

Andrew McAlpine McCune, Rose Hill, Miss.; Memphis (Tenn.) Hospital Medical College, 1899; aged 65; died, January 12, of chronic nephritis and rheumatic heart disease.

William Thomas Thompson, Texarkana, Texas; Meharry Medical College, Nashville, Tenn., 1914; aged 53; died, January 26, of cerebral hemorrhage and hypertension.

Jedd D. Walker, Hogansville, Ga.; Southern Medical College, Atlanta, 1886; died, January 7, in the Newnan (Ga.) Hospital, as the result of injuries received in a fall.

Sidney Fain Hutcherson, Adairsville, Ga.; University of Georgia Medical Department, Augusta, 1913; aged 51; died suddenly, January 12, of coronary occlusion.

Thomas Rowe Price, Glyndon, Md.; University of Maryland School of Medicine, Baltimore, 1891; aged 72; died, January 16, of carcinoma of the prostate.

Herbert Crawford Perkins, Boston (licensed in Massachusetts in 1899); aged 61; was found dead in his automobile, January 29, of cerebral hemorrhage.

Felix Manning Brown, Hopkinsville, Ky.; Vanderbilt University School of Medicine, Nashville, Tenn., 1893; aged 66; died, January 25, of arteriosclerosis.

Lewis Farwell Voke, Columbus, Ohio; Starling Medical College, Columbus, 1896; aged 70; died, January 9, in Clermont, Fla., of chronic myocarditis.

W. Guy Beals, Lake Valley, N. M.; Hahnemann Medical College and Hospital, Chicago, 1883; aged 84; died, Dec. 24, 1937, of cerebral hemorrhage.

Malcolm A. McEachern, Northcarrollton, Miss.; Memphis (Tenn.) Hospital Medical College, 1900; aged 65; died, January 10, of lobar pneumonia.

M. C. L. Kirksey, Dardanelle, Ark.; Memphis (Tenn.) Hospital Medical College, 1897; aged 68; died, January 16, of hypertensive heart disease.

Charles Forest Henderson, Los Angeles; St. Louis University School of Medicine, 1905; aged 58; died, January 24, of coronary thrombosis.

Carl August Vogel, Cincinnati; University of Cincinnati College of Medicine, 1932; aged 30; died, January 28, of a self-inflicted bullet wound.

Leo Rubin, Los Angeles; Long Island College Hospital, Brooklyn, 1913; aged 49; was found dead, January 10, of coronary thrombosis.

Alfred Seeley Wade, Renfrew, Ont., Canada; McGill University Faculty of Medicine, Montreal, Que., 1892; aged 67; died, January 8.

James Hawkins Heflin, Atlanta, Ga.; Atlanta Medical College, 1895; aged 63; died, January 24, of carcinoma of the esophagus.

Robert H. Steinbach ✠ Battle Creek, Mich.; Detroit College of Medicine, 1896; aged 64; died, January 17, of cerebral hemorrhage.

Clifford Lansing Terrill, San Francisco; Hospital College of Medicine, Louisville, Ky., 1903; aged 58; died, Dec. 5, 1937.

Benjamin J. Kent, Oil Trough, Ark. (licensed in Arkansas in 1903); aged 61; died, January 3, of cirrhosis of the liver.

John A. Henry, Hope, Ark.; Louisville (Ky.) Medical College, 1890; aged 76; died, January 30, of chronic nephritis.

John W. Fleming Sr., Salitpa, Ala.; Medical College of Alabama, Mobile, 1879; aged 88; died, Dec. 12, 1937.

Bureau of Investigation

THE GERALD'S BALM FRAUD

A Rupture Cure Swindle Debarred from the Mails

Under the trade styles "Gerald's Balm, Inc.," "Cooperative Balm Company" and "Cooperative Laboratories," all of Baltimore, there has been sold a fraudulent "patent medicine" called variously "Miracle Rupture Balm" and "Gerald's Balm." The stuff, which was sold through the mails, was an ointment consisting chiefly of petrolatum (90 per cent) and small amounts of red pepper, oil of mustard, turpentine and oil of wintergreen. The claims were made that by rubbing this mixture over a rupture visible results might be expected in three days, that trusses could be dispensed with and that persons who had suffered from hernia "for over 40 years" would be cured!

As is usual in "patent medicine" exploitation, the men behind this fraud were quite without any medical knowledge and the business had no physicians, pharmacists or chemists connected with it. In fact the concern was operated by two men: (1) Samuel Cohen, who had been in the clothing business and had never had even a high-school education and (2) Murray Emanuel, who had previously been employed by a finance concern. Cohen manufactured the nostrum himself.

In May 1937 the office of the Solicitor for the Post Office Department called on the concern to show cause why a fraud order should not be issued in the case. On June 2, Cohen and his attorney appeared in Washington and the evidence in the case was heard. According to the government report on the case, the rupture cure concern produced a witness in the person of Dr. J. Page Strong of Baltimore. The biographic records of the American Medical Association show that James Page Strong was graduated in 1907 when he was 37 years old by the Maryland Medical College and was licensed in Maryland in 1908. Dr. Strong is not a member of his local medical society nor, of course, of the American Medical Association. The doctor, it is reported, was unable to explain just how a mixture of petrolatum, red pepper, turpentine and mustard would reach the hernial cavity or penetrate through the several overlying tissues to the seat of the rupture.

Dr. Strong is said to have admitted that Gerald's Balm was a rubefacient or counter-irritant but he also insisted that when it reached the hernial opening it acted as an astringent. While agreeing that a counter-irritant and an astringent acted directly contrary to each other he was apparently unable to explain how the preparation had one effect on the skin and a directly contrary effect when it—allegedly—reached the hernia. Further, the doctor is said to have admitted that no one of the ingredients in the nostrum would reach the hernia in and of itself but to have claimed that the combination of the drugs in the "patent medicine" would do so. Yet Dr. Strong did not even know the ingredients of the stuff until he heard them at the meeting! The doctor, according to the government report, stated that he was not a surgeon, did not specialize in the treatment of hernia and, continues the report, "in fact, showed by his testimony that he was somewhat unfamiliar with the anatomy of the human body at that point."

Physicians who testified for the government brought out the facts that there is no drug or combination of drugs known that, when applied externally, will cure hernia; that the preparation would not produce "gratifying results" in persons suffering from ruptures "as large or larger than that of a chicken egg" or of any other size, as claimed; that it would not produce visible results in "three days"; that the representation that ruptured persons using the "balm" could dispense with their trusses was dangerous to health and life and that there was absolutely no possibility of a cure from rupture existing "for over 40 years" by the use of the preparation.

The Solicitor for the Post Office Department, Judge Karl A. Crowley, declared that the evidence in the case showed that this was a scheme for obtaining money through the mails by means of false and fraudulent pretenses, representations and promises and he recommended that the Postmaster General issue a fraud order. On June 7, 1937, the order was issued.

Correspondence

THE THERAPY OF JAUNDICE—AN ADDITION

To the Editor.—In the article on jaundice (THE JOURNAL, March 5) under section F, Icterus of the New-Born, No. 2, the grave form of icterus, erythroblastosis is not mentioned. A percentage of recoveries in this disease may be secured by transfusion. In these cases other causes of icterus neonatorum should be ruled out, and if this is done a percentage of cases is left that it is impossible to account for except on some other theory. Such a theory is that of erythroblastosis, which occurs in two types, the hydrops and the icteric. In the latter, the jaundice comes on early and is severe, but if transfusion is done early and repeated as needed a percentage of recoveries may be assured.

ALBERT E. STEELE, M.D., Boston.

DANGERS OF BURNING FROM CELLOPHANE COSTUMES

To the Editor:—The Dennison Manufacturing Company sells for 10 cents a book entitled "How to Make Gay Colorful Costumes of Crepe Paper." Costume 9, on page 9, is described under the title "cellophane" and the book states: "You will feel very glamorous indeed in a Cellophane costume. Better not smoke while you are wearing it."

I labored under a charge of being dogmatic when I emphatically refused to allow my daughter to have such a costume for a party. I argued that, any time three people over 16 years of age get together, at least one is smoking. To make a cellophane party costume is to go a long way out of the way in the search for trouble. A costume was provided of less inflammable material, and the incident was forgotten. It comes to mind again today, on receipt of a letter from a relative, who writes of a 5 year old girl "who went to a Hallowe'en party. The children were given Chinese lanterns with candles and the little girl's cellophane costume caught on fire and she died the next morning."

How much interest can be aroused on the part of so-called home magazines to warn of the fire hazard of a product that advertises in their pages remains to be seen. Physicians charged with the responsibility of the health and life of their patients will do well to call their patients' attention to this fire hazard and urge that the patients pass along the warning by word of mouth. The prevalence of smoking by persons of both sexes and almost all ages makes inflammable party costumes strictly contraindicated.

RAMSAY SPILLMAN, M.D., New York.

THE DUBLIN TREATMENT OF ABRUPTIO PLACENTAE

To the Editor:—In a recent paper on premature separation of the placenta, Frederick C. Irving (*Am. J. Obst. & Gynec.* **34**:881 [Nov.] 1937) concluded that conservative treatment offers the best prognosis for the mother. He follows the suggestion of J. O. Polak (*ibid.* **21**:218 [Feb.] 1931), using the so-called Dublin treatment: rupture of the membranes, tight cervical and vaginal pack, and Spanish windlass. This method was introduced at the Rotunda Maternity Hospital in Dublin many years ago. Tweedy strongly advocated this treatment in 1909. R. J. Heffernan (*New England J. Med.* **214**:370 [Feb. 20] 1936), reporting a small series of cases in 1936, also favors the pack and windlass method. However, this form of treatment has not been used at the Rotunda since 1920.

When Gibbon FitzGibbon became Master of the Rotunda in 1920 he modified the treatment, introducing the method now used in Dublin: the membranes are ruptured, a tight abdominal binder is put on, and if the patient is not in labor, 3 minims (0.2 cc.) of solution of posterior pituitary is given every fifteen minutes for four doses. In 1926 FitzGibbon (*J. Obst. & Gynec. Brit. Emp.* **33**:194, 1926) reported sixty-four cases with three deaths. Since the introduction of the newer treatment the mortality from abruptio placentae has been consistently low, much lower than at any other time in the history of the Rotunda. The method is fully described in the latest editions of textbooks written by Dublin obstetricians: Solomons and Falkiner (Textbook of Obstetrics, New York, Oxford University Press, 1937) and O'Donel Browne (Manual of Obstetrics, Baltimore, Williams & Wilkins Company, 1937).

Dr. Andrew H. Davidson, present Master of the Rotunda, writes: "The method of packing the vagina and applying a tight binder was introduced into the Rotunda by Sir William Smyly many years ago, and was in vogue until Dr. FitzGibbon came. He changed the method to the present one, and it is a very rare case that requires packing." In fact, the present teaching in Dublin is that packing is contraindicated, since solution of posterior pituitary given after tight cervical and vaginal packing may cause rupture of the uterus.

Previous to 1920 the mortality from abruptio placentae at the Rotunda was never below 15 per cent. In FitzGibbon's series of cases the mortality was 4 per cent. From August 1928 to October 1936 there were admitted to the Rotunda 255 cases of premature separation of the placenta. The total mortality rate was 4.7 per cent (Rotunda Reports, 1929 et seq.). Bethel Solomons, Master of the Rotunda in 1929, makes the following statement in his report for that year: "It cannot be too strongly urged that even an apparently moribund patient will recover with routine treatment, and vaginal packing is scarcely ever indicated."

NATHAN N. COHEN, M.D., L.M. (ROTUNDA),
Syracuse, N. Y.

MODE OF ACTION OF SULFANILAMIDE

To the Editor:—The article by Dr. Osgood and Miss Brownlee (THE JOURNAL, January 29, p. 349), reporting an investigation of the mode of action of sulfanilamide by use of their marrow culture technic, represents an important contribution to the literature on this subject. Culture of the bone marrow provides a favorable device for investigating the reactions of these cells both to sulfanilamide and to the beta type hemolytic streptococci, alone and in combination. Especially interesting is the observation of the authors that living streptococci and marrow cells can exist together in culture for days without damage to the cells, provided a sufficient concentration of sulfanilamide is maintained. However, it does not seem necessary to postulate any direct action of the drug on the toxins of this organism in order to explain this action, especially since a bacteriostatic action of the drug has not been excluded by their experiments. Their results and those of Colebrook, Buttle and O'Meara and of Long and Bliss, which they quote as favoring their hypothesis, can be adequately explained by an inhibitory action of the drug on the reproductive rate of the organism, such as has already been demonstrated by Long and Bliss for Clostridium welchii in mice. The authors also demonstrated this action but failed to give it proper evaluation in considering the action of sulfanilamide. Furthermore, the experimental data given in the paper do not show that the destruction of the marrow cells is due to toxins of the beta streptococcus, since experiments were not carried out with filtrates from cultures of this organism, either with or without sulfanilamide, to determine the effect on the marrow cells in the absence of organisms. Lacking such data, the authors' results do not support their conclusion that the primary action of sulfanilamide is a neutralization of toxin in the case of the beta streptococcus.

Another point which has not been considered is that a slowing of the metabolism of the organisms, reflected by a slower rate of reproduction, might also account for a diminished pro-

duction of toxic substances. Such an action would explain the authors' observation of some decrease in the size of hemolyzed areas about colonies produced by organisms which had been exposed to sulfanilamide.

The thesis that the elaboration of an exotoxin by an organism is necessary to the action of sulfanilamide against that organism has not found support from unpublished work in this laboratory on a non-toxin producing organism, Bacterium necrophorum. The virulent bovine strain used in these experiments causes an invariably fatal disease in rabbits. However, the infection can be controlled and cure can be brought about by treating the infected animals with sulfanilamide over a period of a week or more. Although we have not determined the mechanism as yet, it obviously cannot be due to the neutralization of any toxin.

ELIZABETH S. HEMMENS, B.S.
G. M. DACK, M.D., PH.D., Chicago.
Department of Bacteriology and Parasitology, University of Chicago.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

GOUT

To the Editor:—My father has been suffering with recurring attacks of joint pain for the past ten years. The first attack involved the left big toe, which became swollen, red, tender and very painful. At this time a diagnosis of gout was made and confirmed by x-ray examination of the toe and uric acid determination of the blood. He was given a purine free diet, which he has used ever since, but in spite of his guarded diet he has had yearly attacks of joint pain. The attacks usually occur suddenly and at night. At times he can predict the onset of the attack by slight pain in the joint. Usually only one joint is involved, but at present he is suffering with pain in the left wrist and right ankle. After the acute attack, the involved joint remains stiff for some time. At no time has any elevation of temperature been noted, although the affected joint is much warmer. The joints most frequently involved are the left big toe, left ankle, left wrist and right elbow. He is 52 years old and a merchant. He is a hard worker and of a nervous type. He has always been troubled with constipation and indigestion (sour stomach and heartburn). For the past two years he has had severe frontal headaches lasting from twenty-four to forty-eight hours. In 1923 he passed two stones and in 1933 x-ray examination of the kidneys showed two kidney stones in the left kidney. A tonsillectomy was performed in 1923. A Wassermann test of the blood in 1933 was negative. X-ray examination of the teeth and sinuses gives negative results. Physical examination is negative, except for a hypertension varying from 160/110 to 180/115. The heart is slightly enlarged to the left. The second aortic sound is greater than the second pulmonic sound. The lungs are clear. The abdomen is normal. The prostate and seminal vesicles are normal. X-ray examination of the feet shows an area of rarefaction on the head of each metatarsal which has the appearance of gout. Blood examination shows 4,580,000 red cells, 4,200 leukocytes and 90 per cent hemoglobin. The urine has a specific gravity of 1.022 and shows 1 plus albumin, a few epithelial and pus cells, and occasional hyaline casts. A uric acid determination during an acute attack revealed 2.6 mg. per hundred cubic centimeters of blood. The nonprotein nitrogen is 40 mg. per hundred cubic centimeters of blood. Gastric analysis at sixty minutes reveals free hydrochloric acid 41 degrees and total acidity 61.5. What can be done to prevent future attacks of joint pain? What foods must not be eaten? What is your opinion as to eating small amounts of meat, drinking coffee or taking small amounts of wine with the meals? Are there any vegetables that contain uric acid? Is cinchophen the drug of choice and if so how should it be given to avoid damage to the liver? What is the significance of normal uric acid determination in an acute attack of gout? What part does the kidney play in this case? M.D., Colorado.

ANSWER.—It is assumed that peripheral subcutaneous tophi are not yet present. Whether they are present or not, the history is consistent with a diagnosis of acute recurrent gouty arthritis. It is possible for patients to have a normal uric acid concentration in the blood during an early acute attack. As the disease progresses, hyperuricemia becomes more obvious and more chronic. A value of blood uric acid as low as 2.6 mg. per hundred cubic centimeters during an attack is unusual; indeed, it is low even for a normal person. It is suggested that estimations be repeated, possibly checked in different laboratories.

Gout exhibits a seasonal effect, becoming acute particularly during the spring (February-May) and autumn (August-October). During these months, patients should be particularly careful to avoid the various provocatives of gout; they should adhere to their diet, probably take cinchophen intermittently, and avoid unusual trauma such as excess activity (from golfing, walking or long automobile driving). The amounts of physical and recreational activity to which the patient is accustomed can generally be indulged in with impunity; it is the unaccustomed amounts (often indulged in during vacations) that may provoke an attack.

During an acute attack a patient with gout should be on a purine-free diet. After the attack is over he should continue on a purine-low diet four or five days a week and a purine-free diet two or three days a week. A diet list used in one American clinic where many patients with gout are seen is as follows:

1 Food that contain a large amount of purine	2 Foods that contain a moderate amount of purine	3 Foods that contain no purine
	(a)	
Sweetbreads	Chicken	Milk
Liver	Mutton	Eggs
Kidney	Bacon	Cheese
Squab	Oysters	Caviar
Calf's tongue	Herring	Shad roe
		Nuts
	(b)	
Turkey	Salmon	Gelatin
Pork	Lobster	Sugar and sweets
Veal	Crab	Coffee *
Sausage	Whitefish	Tea *
Beef	Asparagus	Cocoa *
Goose	Lima beans	Fats of all kinds
Anchovies	Navy beans	Fruits of all kinds
Sardines	Kidney beans	Cereals (except whole grain)
Trout	Kohlrabi	Bread (except whole grain)
Pike	Onions	Vegetable soup (made without meat)
Perch	Peas	Vegetables of all kinds except those listed in column 2 such as
Codfish	Spinach	Lentils
Lentils	Mushrooms	Spinach
Gravies	Oatmeal	Mushrooms
Meat extractives	Whole-grain cereals—such as cooked whole wheat and wheat biscuits	Peas
Meat soups	Whole-grain bread—such as whole wheat and graham bread	Lima beans
		Navy beans
		Kidney beans
		Kohlrabi
		Asparagus
		Onions

* Contain practically no purine as served.

It is generally recommended that patients whose gout is moderately active confine their foods largely to those in column 3, eat one selection daily from foods listed in column 2, avoid foods in column 1 *a* entirely, and eat one selection from foods in column 1 *b* on rare occasions only, perhaps once every one or two weeks or less often, depending on the severity of their gout. Moderate amounts of coffee and tea are permissible. All wines and liquors should be avoided; although they contain no purines or only minute amounts, they adversely affect gouty patients with unusual consistency.

The majority of physicians interested in gout in this country regard the intermittent use of cinchophen necessary for the adequate control of the gout in most cases (Hench, P. S.: Diagnosis and Management of Gout in Certain Parts of the United States, *Proc. Staff Meet., Mayo Clin.* **12**:262 [April 28] 1937). It is not certain whether liver damage from cinchophen can ever be completely avoided in the susceptible individual regardless of the method of administration. However, the great majority of persons, including patients with gout, are apparently not susceptible to cinchophen and can take it repeatedly with impunity. Graham's (The Treatment of Gout, *Proc. Roy. Soc. Med., Sect. Therap. & Pharmacol.* **20**:1, 1937) method of administration is as follows: 7½ grains (0.5 Gm.) three times a day for three or four consecutive days each week. When the patient is taking cinchophen he should also take from 1,000 to 1,500 cc. of fluid daily and enough alkali to alkalinize each specimen of urine voided (e. g., sodium bicarbonate, two teaspoonfuls in the morning and one or two in the evening). Some recommend also that generous amounts of carbohydrate be taken on the days when cinchophen is used.

Early signs of susceptibility to cinchophen are gastro-intestinal upsets (nausea) and hives or other skin reactions. With the appearance of these symptoms, which seem to be due to the cinchophen (and not to the alkali), cinchophen should be stopped, probably permanently. Some believe that hives do not afford a permanent contraindication to cinchophen in the case of gouty patients who cannot control symptoms otherwise and that hepatic susceptibility does not necessarily accompany skin susceptibility. They recommend the continued use of cinchophen

in smaller doses. When the more serious signs of cinchophen toxicity appear (loss of weight, dyspepsia, icterus, pruritus) administration of the drug should of course be stopped immediately and appropriate therapy started (intravenous dextrose, high carbohydrate diet, generous fluid intake). The results of such treatment are now usually satisfactory, and fatal cases of cinchophen toxicity are becoming fairly rare.

There is no established pharmacologic substitute for cinchophen. In general, the amounts of salicylates necessary to reproduce the effect of cinchophen on urate excretion are so large that gastro-intestinal irritation and sweating are induced. Colchicine has no effect on urate excretion. Recently Hench (as cited) and Rutledge and Bedard (Criteria for the Diagnosis of Presumptive [Pretophaceous] Gout: Management of an Illustrative Case, *Proc. Staff Meet., Mayo Clin.* **12**:149 [March 10] 1937) have noted preliminary clinical observations on the synergistic action of salicylates and aminoacetic acid on urate excretion and have suggested that this combination may prove to be an effective substitute for cinchophen. This is supplemental to the physiologic observations of Quick (Relationship Between Chemical Structure and Physiologic Response; Conjugation of Salicylic Acid with Glycine and Its Action on Uric Acid Excretion, *J. Biol. Chem.* **101**:475 [July] 1933).

Patients with moderately advanced or late gout frequently develop kidney stones or gravel with or without frank nephritis. The gravel or stones are usually almost pure urates and are not opaque, and hence they are not visible in ordinary roentgenograms. Stones which ordinary roentgenograms reveal must be of mixed composition. Urate stones can be revealed only as nonopaque islands in the opaque shadows produced by intravenous (or other) pyelograms. The purpose of giving alkali during cinchophen administration is to prevent urates, which are being excreted in excess, from precipitating as stones or gravel in an acid urine.

COMPLEMENT FIXATION FOR WHOOPING COUGH

To the Editor:—Please send me information on the complement fixation test for whooping cough. What is the technic?

J. C. CHAPMAN, M.D., Birmingham, Ala.

ANSWER.—Daughtry-Denmark, since 1933, has used the complement fixation test technic for diagnosis, and after vaccination with the customary total dosage of 8 cc. of authorized B. pertussis vaccine (*Am. J. Dis. Child.* **52**:587 [Sept.] 1936). To secure complete complement fixation, some children require a total dosage of 11 cc., occasionally 14 cc. E. L. Webb (serologist, Georgia State Department of Health, Atlanta), uses the following technic:

The procedure follows closely Kolmer's qualitative test for syphilis. The only difference in the application of this test to specimens to be examined for syphilis and those to be examined for whooping cough lies in the antigen. This antigen, composed of the killed B. pertussis in suspension, is furnished by Eli Lilly Biological Laboratory, Indianapolis.

Details of Procedure

	Unknown, Positive and Negative Controls			Reagent Controls		
	Tube 1	Tube 2	Tube 3	Anti-gen	Hemo-lytic	Cell
Saline solution	0.5 cc.	0.5 cc.	1.0 cc.	0	1.0	2.0
Patient's serum	0.2	0.1	0.2	0	0	0
Antigen suspension ⅛ anticomplementary unit	0.5	0.5	0	1.0	0	0
Complement solution, 2 full units	1.0	1.0	1.0	1.0	1.0	0
Place in refrigerator at 6-8 C. for 14-18 hours (over night) and then in water bath at 37 C. for 10-15 minutes. Remove and add						
Amboceptor solution, 2 units	0.5	0.5	0.5	0.5	0.5	0.5
Sheep cell suspension, 2 per cent	0.5	0.5	0.5	0.5	0.5	0.5
Shake well and place in 37 C. water bath for one hour (ten minutes after serum, antigen and hemolytic controls are completely hemolyzed may be substituted). Remove and read results immediately or store in refrigerator three or four hours for later reading.						

The same unit of complement is taken as that determined in the titration preparatory to the performance of the complement fixation test, on specimens of blood submitted for the examination for syphilis.

The dosage of the pertussis antigen employed is one third of the anticomplementary unit determined by titration. For instance, if the anticomplementary unit of the pertussis antigen is 0.5 cc. of a 1:5 dilution, 0.5 cc. of a 1:15 dilution is employed in the test.

Because the anticomplementary activity of this antigen gradually increases with age, even though stored in the refrigerator, small fresh lots of the antigen should be supplied at frequent intervals.

Any laboratory equipped for Wassermann testing can perform this test. The required blood (1.5 cc. or more) is obtained from an arm vein or from the finger tip. After the skin has been cleansed with alcohol it is dried with sterile gauze; several deep pricks are made close together with a sharp Hagedorn needle; the blood drips into a small, sterile centrifuge tube; plugged with sterile cotton and labeled, it is refrigerated until the serum is removed. Complement fixation is considered diagnostic; if 4-plus after completion of the prophylactic vaccine injections, it is considered an index of immunity. It should be performed soon after completion of the customary total dosage of vaccine. If the reaction is not 4-plus, an additional 3 cc. of vaccine is given and the test repeated until complete fixation occurs.

SEA SALT BATHS—COD LIVER OIL IN SUMMER

To the Editor:—1. Is there any beneficial effect obtained by bathing infants and children in sea salt at home? 2. Is there any contraindication to the administration of cod liver oil to infants during the summer season?

M.D., Pennsylvania.

ANSWER.—1. There is no reliable experimental or clinical evidence to indicate that there is any beneficial effect obtained by bathing infants and children in sea salt at home. It has been loosely stated that sea water has a tonic effect through its mild counterirritant action in stimulating the peripheral circulation. However, the consensus among physical therapists is that the temperature of the water, rather than the content of salt, is the significant factor determining the amount of hyperemia of the skin. A salt rub, however, preceding a bath, of course, produces hyperemia of the skin.

2. There is a deep-rooted belief in the public mind that cod liver oil causes digestive disturbances in hot weather. Cod liver oil in the usual dose of one teaspoonful three times a day rarely gives rise to digestive disturbances in hot weather in infants who can tolerate it at other seasons. However, digestive disturbances such as vomiting or diarrhea would constitute a temporary contraindication to its administration at any time of the year. An infant does not require as much cod liver oil during the summer because of sun baths but at least a teaspoonful daily should be continued during the summer, because, after an interruption in its administration for several months, difficulty in getting the child to take it again may be encountered.

DIAGNOSIS OF CANCER FROM URINE

To the Editor:—In the June 1937 edition of "Modern Medicine," volume 5, no. 6, page 66, I note an advertisement by the William Dunkler Laboratories of Chicago, in which they offer a "simple and reliable" clinical laboratory diagnostic set to physicians for various procedures. Among the tests which can be performed by the physician with this set is "early diagnosis of cancer from urine." Can you enlighten me as to the details and reliability of this test and the technic in performing it? As a laboratory man naturally I am interested but dubious. In following recent clinical literature I have not seen reports of any such test that is out of the experimental stage.

WILLIAM COOPER, M.D., Los Angeles.

ANSWER.—The request apparently refers to the Aron test, which has been the subject of much discussion and considerable criticism. Aron has published a large number of papers, chiefly in the French journals, in which he makes the claim that the urine of those suffering from cancer when injected intravenously into the rabbit causes characteristic alterations in the adrenal gland. In the *American Journal of Cancer* are abstracts of papers by Aron and Aron, Stolz, Weiss and Kuntzmann (**29**:159 [Jan.], **30**:164 [May] 1937), all of which are fairly favorable. Aron's latest technic is to precipitate from 1,900 to 1,200 cc. of urine. The precipitate is dried in a vacuum and dissolved in physiologic solution of sodium chloride. The rabbits are then given intraperitoneal injections of 5 cc. each, receiving a number of such injections. On the other hand Desaive and Coheur (abstr. *Am. J. Cancer* **26**:212 [Jan.] 1936) find the method to be without value and the same is true of Roussy, Oberling and Guérin (abstr. *ibid.* **24**:867 [Aug.] 1935). Aron replies (abstr. *ibid.* **24**:868 [Aug.] 1935) that there are certain serious sources of error, which he hopes to remove. The changes which he notes are diminution in size and the lipoid of the spongiocytes. It is obvious from such contradictory statements that the method has still so many errors that it is of little use. There is no procedure in which a "simple and reliable" clinical laboratory diagnostic set will permit the early diagnosis of cancer from the urine and there is no reason to believe that there is any "simple and reliable" test for cancer in general.

COLON BACILLUS CERVICITIS

To the Editor:—A patient almost a year ago had an acute cystitis, which proved on culture to be of colon bacillus origin. This cleared up rather promptly, but almost at the same time she began complaining of backache, pain in her right side (right lower quadrant) and dyspareunia. A little later she began to have an increasing amount of discharge. (She had never had any before.) Usually the discharge is nothing but clear mucus but at times it is whitish. Sometimes she will have cramps and then notices considerably more discharge. Microscopic examination of the discharge shows a few epithelial cells and only one kind of organism—a gram-negative rod which I am sure is the colon bacillus. A smear from the cervix contains so many of these organisms exclusively that it looks like a pure culture. Another peculiar thing is that there has never been more than two or three pus cells per field. I am absolutely positive that the patient has never had gonorrhea, but clinically it looks like low grade salpingitis. The time of onset—at the same time as the cystitis—also seems to indicate colon bacillus origin, although I never heard of it. The patient sometimes has a low grade fever up to 100 F. and once or twice a leukocytosis of 14,000. Vaginal examination reveals little except tenderness in the right fornix and pain when the uterus is moved. Is there such a thing as colon bacillus salpingitis? If there is such a thing what can I do about it, or what is the treatment?

M.D., Ohio.

ANSWER.—Rather recently it has been suggested that chronic infection of the cervix is important in the etiology of persistent vesical discomfort and that eradication of the cervical disease is accompanied by cessation of the urinary tract symptoms. This is a rather revolutionary view, somewhat contrary to accumulated experience.

This case may belong in that group. Yet it would appear more logical to assume that infection was first present in the urinary tract, the genital infection occurring secondarily—not the reverse. Colon bacillus infection of the fallopian tubes seldom develops as an independent clinical entity. It may occur as an aftermath of instrumentation of the cervix or as a complication of stricture of the cervix. The colon bacillus is seldom found in simple gonorrheal disease of the tubes but it is usually present in cases of persistent tubo-ovarian abscess.

In treatment, adequate cervical drainage is important. It has been suggested that if there is no localized palpable mass the administration of sulfanilamide may be indicated. However, the use of this drug in miscellaneous urinary infections and mixed surgical infections without careful bacteriologic study is not to be commended and a report of the treatment of such cases without detailed bacteriologic investigation lacks scientific value. Far more evidence is needed to warrant the use of sulfanilamide for infections caused by Bacillus coli, B. typhosus and B. paratyphosus. If this therapy is attempted and fails, painstaking search for undrained pelvic foci should be made.

CHRONIC RECURRENT CANKER SORES

To the Editor:—A woman, aged 25, complains of canker sores of the mouth, involving the lips, the buccal surfaces, the tongue and the gums. These may be single or multiple and vary in size from 2 mm. to 8 or 10 mm. in diameter. They occurr sporadically and are quite painful. The silver nitrate cautery relieves the pain, and healing occurs in approximately two weeks. They have been present for at least fifteen years. Could this be a purely local phenomenon? What systemic conditions are associated with lesions of this type? There is no anemia. Elimination diets have proved ineffective. Supplementary vitamin therapy has also failed.

PAUL J. HEIDRICK, M.D., Wilber, Neb.

ANSWER.—Although "canker sores," or aphthae, were first described by Hippocrates some 400 years before the birth of Christ, accurate knowledge concerning them is still very meager. These lesions are a maculofibrinous stomatitis and the case described would seem to fall into one of two groups: (1) habitual aphthae or (2) chronic intermittent aphthae.

1. Habitual aphthae constitute the dyspeptic canker sore and have been thought by some workers to be a low grade infection and by others have been considered allergic. Deficiency of vitamin B has been mentioned as a possible cause. The fact that dietetic treatment and vitamin therapy have failed to be effective in this case would seem to place it outside this group; but the allergic possibilities should be thoroughly worked out before a definite decision is made.

2. Chronic intermittent recurrent aphthae were first described by Mikulicz in 1888 and have been called Mikulicz's aphthae. This disease occurs primarily in women and not infrequently has its onset at the time menstruation begins. It tends to recur at intervals of from four to six weeks and the lesions are quite compatible with those described in this case. Nothing definite is known concerning the etiology. Many theories have been advanced but up to the present time all of them are purely speculative. No specific treatment is known. Local treatment with 5 per cent chromic acid solution or with alum or silver nitrate is recommended. It is not wise to allow the patient to use the silver nitrate stick because crater-like scars may result.

Occasionally dermatitis herpetiformis will produce lesions on the mucous membrane of the mouth, but the associated lesions of the skin serve to make the diagnosis.

It would seem that the fifteen years duration would fairly well rule out serious systemic disease and would be a powerful argument in favor of considering this as a local phenomenon, probably a case of Mikulicz's aphthae.

DYSENTERY WITH GIARDIA

To the Editor:—A recent patient had symptoms of dysentery. I had a stool examination made with the following report: "Green producing streptococci and cysts of Giardia lamblia found." Literature on treatment of the latter is rather scanty—the only advice is neoarsphenamine. I am using mapharsen, 0.04 Gm. every five to six days, with some improvement. I will appreciate any advice you may give.

M.D., Michigan.

ANSWER.—Many therapeutic agents have been used in the treatment of patients harboring Giardia lamblia. The best opinion today supports the belief that the newer arsenicals give the best results. A procedure that has enjoyed approval is to give the patient 0.25 Gm. of treparsol (meta-amino-para-oxyphenyl-arsenonic acid) three times a day for four successive days. The patient then waits eight days and repeats the treatment, again waits eight days and again repeats the treatment. Under such a regimen most patients will be freed of their Giardia cysts at the end of the third course of treatment. It must be borne in mind that 2.5 per cent of patients will have some toxic manifestations caused by the arsenic, and in such cases treatment must be discontinued immediately.

It is by no means certain that Giardia is the cause of dysentery, for there is no general agreement on this point. Evidence based on pathologic studies, or even careful clinical evaluation of cases, has not conclusively demonstrated that this parasite is the cause of either diarrhea or dysentery. The presence of green-producing streptococci in feces may be considered normal, since most of the enterococci produce green pigment on blood agar plates.

It is suggested that a further study of the patient should be made before concluding that the cause of the dysentery is explained by the presence of Giardia.

HEREDITY OF DEAF-MUTISM

To the Editor:—What are the hereditary possibilities for the offspring from a normal man whose parents are both deaf mutes?

M.D., Ohio.

ANSWER.—Hereditary deaf-mutism is almost certainly inherited as a simple mendelian recessive. If this is the case, deaf-mutes are homozygous, pure for the deaf-mute gene, and a mating of two hereditary deaf-mutes could not produce normal offspring.

On the other hand, it is estimated that only from one third to one fourth of deaf-mutes are of the hereditary sort. It is well known that many infants are born deaf as the result of prenatal infection or become deaf as the result of infantile disease. Meningitis, scarlet fever and syphilis cause many cases of deafness. This type of deafness is not hereditary. If one or both of the mated deaf-mutes is of the nonhereditary sort, only normal offspring are to be expected, for all would inherit the gene for normal hearing from the parent with nonhereditary deafness.

WASTING DISEASE OF PIGEONS

To the Editor:—There is a disease in pigeons which is characterized by wasting, paralysis and green and watery stools. It is called "lights," or "poliomyelitis." I am interested in finding out the name and dosage of the drug that is given orally for this condition.

M.D., New York.

ANSWER.—The symptoms described are common to several pigeon diseases and, similarly, the term "lights" is applied to many diseases associated with emaciation. Of the parasitic diseases that cause these symptoms two nematodes, Ornithostrongylus quadriradiatus or Capillaria columbae, might be involved. The former is about half an inch in length, thin, and reddish in fresh specimens. It is most numerous in the first half of the intestine and causes an acute enteritis. The second species is about an inch long, of the diameter of a hair, and white. Infestations are apt to be more chronic. This parasite is difficult to see unless the intestinal content is suspended in water.

Nothing is known about the treatment for these parasites. However, since they are nematodes, tetrachlorethylene might be of value if the infestation has not produced induration. On the basis of what is known about the dose for chickens, one should

not exceed 0.25 cc. of the drug. One should attempt to control these parasites by sanitation. Transmission is simple and direct, so that clean dry pens or wire floors and isolation of affected individuals should accomplish much.

There is also a bacterial disease that attacks young birds by preference and causes diarrhea and emaciation. Occasionally nervous symptoms are exhibited and not infrequently infection localizes in the joints of the wings or legs. The causative organism, a member of the paratyphoid group, is Salmonella aertrycke. There is, of course, no treatment; but since the infection is often transmitted through the egg, some progress can be made by eliminating the carriers detected by an agglutination test. Rigid sanitation should also be practiced.

DIATHERMY AND OTOSCLEROSIS—STUFFY SENSATION IN EARS

To the Editor:—1. What is the present consensus on the value of medical diathermy applied to the ear or mastoid in the treatment of otosclerosis of the familial or hereditary type? 2. Many patients complain of a numb, dead or stuffy feeling in the ear, although on examination no wax is present and the ear inflates normally on the Valsalva experiment. Is there any explanation of this sensation?

M.D., England.

ANSWER.—1. Medical diathermy is useful for one purpose and that is the production of heat. Applied to the ear or the mastoid in the treatment of otosclerosis of the familial or hereditary type, it can only produce heat and there is no evidence that heat is of the slightest use in the treatment of otosclerosis.

2. A numb, dead or stuffy feeling in the ears is frequently complained of by people who are deaf. This complaint is seen just as often in those who have a perception or auditory nerve type deafness. It is possibly the patient's way of saying that things sound distant or muffled.

INFECTIONS OF EXTERNAL AUDITORY CANAL

To the Editor:—I will appreciate any information on the treatment of "swimmer's ear" or fungous infection of the external auditory canal. I have a case that is stubborn and quite extensive. It cleared up once but recurred after about three days and was much worse than the first attack. The last attack has lasted thirteen days and there was excessive serous discharge from both ears and vesicles on the outer ear and cheek, which is still present to some extent. What is the treatment and what are the chances of recurrence?

M.D., Nebraska.

ANSWER.—The treatment of fungous infection of the external auditory canal consists of instilling on the affected side some 2 per cent salicylic acid in 95 per cent alcohol several times a day for a week or so. As a rule, the use of these drops is highly efficient. If the fungus has penetrated through the membrana tympani to the middle ear, the condition may become more stubborn and will require more in the way of local cleansing and the instillation of medicaments. The diagnosis of fungous infection of the external auditory canal is made by microscopic examination and the demonstration of the presence of aspergilli of one type or another. The description given does not correspond to the usual appearance of otomycosis. If microscopic examination fails to demonstrate aspergilli, the case described may be considered to be streptococcic dermatosis of the ears (Mitchell, James H.: Streptococcus Dermatoses of the Ears, THE JOURNAL, Jan. 30, 1937, p. 361).

PREPARATION AND PRESERVATION OF COCAINE SOLUTION

To the Editor:—Please advise me regarding the best method to use in preparing cocaine solution for nose and throat work. I find that after it stands a short time a cloudy material forms.

M.D., Pennsylvania.

ANSWER.—Cocaine solution made from freshly distilled water with from 1 to 3 thousandths parts of tricresol added as a preservative keeps in good condition for a long time. The preservative is added because cocaine solution should not be sterilized by heat, for the salt is decomposed at a temperature of 98 C. The cloudiness that appears in such solutions is probably due to mold.

HYPERPLASIA OF SINUSES

To the Editor:—From x-ray examination of my sinuses, a hyperplasia of all of the sinuses have been diagnosed, some being involved more than others. Instead of surgical intervention, I would like your opinion on the possible application of x-rays to my sinuses. I am doubtful about surgery.

M.D., California.

ANSWER.—Neither the literature nor communication with accepted authorities lends any support to the idea that x-rays used in a therapeutic manner are helpful in a condition such as described.

Council on Medical Education and Hospitals

ANNUAL CONGRESS ON MEDICAL EDUCATION AND LICENSURE

Thirty-Fourth Annual Meeting, held in Chicago, Feb. 14 and 15, 1938

(Continued from page 1134)

DR. FREDERICK A. WASHBURN, Boston, in the Chair

COUNCIL ON MEDICAL EDUCATION AND HOSPITALS

FEBRUARY 14—AFTERNOON

Demand and Supply in the Learned Professions

WALTER M. KOTSCHNIG, PH.D., Northampton, Mass.: This article appeared in full in THE JOURNAL, March 26, page 941.

A Plan of Introduction to Clinical Medicine: Some Variations in Curriculum of the Third and Fourth Years in Medical School

DR. B. O. RAULSTON, Los Angeles: The question of how third year students may best receive their introduction to clinical work is not easily answered because of the various factors concerned. Opinion will differ from one faculty to another, and the facilities vary from one institution to another. In our school immediately following the second year, which includes six hours a week in physical diagnosis during the second semester, the whole class spends the first seven weeks of the summer (June 14 to July 31 in 1937) in the wards in the department of medicine, in the capacity of clinical clerks. They are in daily attendance from 8:30 a. m. to 5 p. m. except on alternate Saturdays and Sundays. A group of six or eight students is placed in each of seven units. The average capacity of the units is forty beds. In addition to the house staff and visiting physicians there is a half-time instructor in daily attendance on each unit whose sole responsibility is to direct and supervise the work done by the students. The abundance of material permits selection of patients to be assigned for this work. The clerk is required to do a complete "work-up," including routine laboratory work on each patient assigned to him. The instructor reads and corrects the history, checks observations in the physical examination, and when these are approved by him they become a part of the permanent hospital record of the patient. Progress notes are required in accordance with the condition of the patient.

On one day each week an instructor from the department of ophthalmology visits each group of students and spends from one to two hours demonstrating conditions of the eyegrounds in patients being studied. Similar instruction is given weekly in the department of otorhinolaryngology. At the noon hour on four days each week there is a lecture for the entire class. These correspond to the course usually designated as "applied" or "pathologic physiology." There are no other set exercises. Clerks are not required to attend any formal ward rounds but are permitted to accompany the attending physicians on rounds if they choose. The instructors hold informal discussions with the groups concerning history writing, physical examination, how to make intelligent progress notes, and many other topics that naturally arise in such work. Clerks are required to attend autopsies done on patients they have studied. While there is no assigned reading and no written discussions are required aside from those contained in the patient's record, students are advised concerning sources of information related to the problems presented by their patients. At the middle of the period the groups are shifted from one unit to another. In 1937 the average number of patients worked up per student for the seven weeks was thirteen.

The chief advantage in this plan is the fact that students are permitted to study patients under careful supervision and practically without interruption for a period of seven consecutive weeks. They are unanimous in stating that they learn more during this time than in other periods of equal length in the

third or fourth years. Members of the faculty also have been well pleased with the results of this summer work, which is looked on as a continuation of the course in physical diagnosis and is considered to be a part of the second year curriculum. No defense is made against taking seven of the fifteen weeks of vacation. The remaining eight week period is more than enough.

Two factors involved in such a clerkship deserve special emphasis. First is the number of available patients in proportion to the number of students. This ratio depends on the rate of turnover and is naturally smaller in private teaching institutions where patients are selected than in charity hospitals where many patients have chronic diseases and therefore must be hospitalized for a longer time. Private hospitals find it too expensive to maintain a medical service large enough to accommodate an entire junior class as clinical clerks at one time.

During the first semester of the third year the entire junior class is assigned to clinical clerkship in the department of medicine. There is not the freedom from interruption that was enjoyed in the summer. Each group has a one hour bedside clinic four days a week at which a student presents the record of one of his patients to a senior attending physician and the other members of the group. There is a one hour set exercise at noon each day. There are four hours of lectures per week in the afternoons, and one afternoon is spent in the morgue examining fresh tissues. An instructor from the x-ray department spends from one to two hours a week with each group reviewing and discussing examinations that have been made by that department on patients studied by the group. Having had the summer work, these students are able to follow this schedule and do a complete work-up of from one and one half to two patients a week, including written directions for treatment, differential diagnoses, and one topic a week concerning some phase of the problem presented by a patient. By the end of the first semester each student will have done a complete work-up of about forty patients, in addition to his attendance at set clinics, group conferences and lectures.

In the second semester, half of the class is assigned to the department of surgery and special courses in obstetrics, the other half to special work in the department of medicine. The experience of twenty-three weeks' clerkship in medicine enables the student to carry on the work in other departments with relative ease and success.

In the summer following the junior year the class is divided into four groups, each of which spends four weeks in the outpatient department in medicine, four weeks in practical obstetrics and seven weeks as vacation. The last group in obstetrics overlaps the regular school year by one week. By this plan the students have their introduction to outpatient work in the department of medicine at a time when they have few if any other responsibilities. They have ample time in which to study their patients and to read about the diseases encountered. They are also of great value in carrying on the work of the clinic. To complete their work in practical obstetrics during the summer is to avoid continuous interruption of the fourth year work by attending deliveries at all hours of the day and night. This also meets the demands of our department of obstetrics for having the students' entire time for a minimum of four consecutive weeks.

In the fourth year the class is divided into three groups. Each group spends one third of the year as clinical clerks in the department of surgery, one third in the outpatient department in medicine, including four weeks of clerkship in pediatrics, and one third in special subjects including clerkship in psychiatry, set clinics in communicable diseases, syphilis clinic and dermatology clinic. The entire class attends set exercises at noon each day.

The results obtained by giving our students their introduction into clinical medicine by way of a clinical clerkship in the department of medicine encourages the faculty to continue this procedure. Crowding of the medical curriculum, waste of time by medical students during long summer vacations, and the results obtained by using half of the usual vacation time between the second and third and between the third and fourth years of medical school appear to justify continuation of the plan in this school.

Undergraduate Instruction in Preventive Medicine

DR. J. G. FITZGERALD, Toronto: This article will be published in full in THE JOURNAL.

DISCUSSION

DR. JAMES N. BAKER, Montgomery, Ala.: The practice of medicine is becoming more and more preventive, and unless the men who take up the burden when we put it down are trained so that they can appreciate the need of integrating their activities into the various social structures that are around them they will fail in the purpose for which medicine is created. That is a challenge which is coming to the medical profession. There are many problems which have an important preventive aspect which the practitioner of medicine in his daily routine must learn to solve, and unless there is complete integration between the forces of public health per se, the official forces of public health and the medical profession, we shall both fail in performing the responsibilities that are ours.

DR. W. S. LEATHERS, Nashville, Tenn.: I think the medical schools of the United States and Canada have made considerable progress during the past twelve years in providing instruction in preventive medicine and public health. It has been my privilege to keep in touch with what has been done to some extent, and I am sure that in the next decade or so most of the medical schools in this country will provide reasonably adequate teaching in this important phase of medicine. The second point is that I am sure Dr. FitzGerald does not mean to imply that in a systematic way the outline which he presents should be followed in some kind of didactic type of instruction. He has simply presented a comprehensive discussion with reference to many points that ought to be considered by medical educators in this particular field. I think we owe him a debt of gratitude. The third point is that I think the medical schools are obligated to pay more attention to this particular phase of teaching, because of the increase in knowledge in public health during the past fifty years. We know a great deal more about how to keep well now than we did prior to that time, and, unless we translate this knowledge in terms of application in the experience and outlook of medical students, medical education will fall short of the objective which it should fulfil. In view of this remarkable development in the extension of public health, the attitude of the public toward this phase of medicine and the fine contribution which the physicians can make, the outlook in this particular field is most promising.

Some Aims and Methods of the Undergraduate Teaching of Obstetrics

DR. JAMES R. MCCORD, Atlanta, Ga.: Too many maternal deaths occur in the United States. There seems to be no one cause or factor responsible. Permanent improvement will be difficult of achievement unless there is a parallel improvement in the teaching of obstetrics in the medical school. Administrative officials of our schools and hospitals must realize that obstetrics is a major branch of medicine and deserves equal recognition with medicine and surgery. So long as we attempt to teach obstetrics without an adequate number of obstetric patients, just so long must our students be poorly prepared to practice the obstetric art. There seems to be no substitute for the actual delivery of as many women as possible by each student. It is of vital importance that these deliveries be constantly and competently supervised. Nor should this mean the witnessing of deliveries by large or small groups of students. The mechanics of labor can be mastered only by frequent continuous observation and examination during the entire labor. Outdoor services, incompetently supervised, do not offer such opportunity. It should be the aim of our schools to familiarize the student thoroughly with normal obstetrics. When he starts practice he will be able to recognize quickly the dangerous and abnormal. This quick recognition is probably half the battle. It might be said that the one or two intern years are for this purpose. However, actual contact with obstetric patients must be backed by certain fundamentals in teaching. If the principles are mastered, the student in his actual practice will easily be able to weave in the details. One of the serious faults of obstetric teaching is the lack of repe-

tition. This necessitates, of course, enough obstetric hours. I like to teach this repetition of fundamental principles by sending the student to the board and having him explain his answer to the entire class.

At Emory University School of Medicine the course in obstetrics begins in the second semester of the second year. The student is taught the complete antepartum examination. This is done by lectures, quizzes, manikin instruction and finally the actual patient. The entire third year should be devoted to the mechanism and management of normal labor and the puerperium and to the various anomalies of mechanism. It is impossible to overemphasize this teaching. The entire class meets two hours each week throughout the year. Small sections attend the antepartum clinic and are given eighteen hours of individual instruction. Repeated examinations of pregnant women give the student confidence in abdominal palpation. The antepartum examination of many women teaches the student to become conscious of the diseases that frequently complicate pregnancy.

During the senior year it is important that the student be familiar with material that has been previously presented. We do this in several ways. The class is divided into small sections. For six weeks their entire time is devoted to obstetrics. The fundamental in this teaching is, again, actual contact with many patients both in the labor wards and in the antepartum clinics. The group has a twelve hour manikin review on the mechanisms of labor, and the operations of forceps and version are shown. There is sixteen hours of conference quizzes with the professor of obstetrics. Each student for eight hours every day is on active duty in the labor rooms. He delivers all normal cases and is under constant supervision. He is not allowed to leave the labor room and makes and records frequent observations and examinations of his patient. His record is a part of the hospital record. Under the supervision of an experienced labor room supervisor he is taught the preparation for vaginal examination and is required to do several. Each student delivers from thirty-five to seventy-five women. The student on inactive service for an eight hour period gives anesthesia for deliveries, does certain laboratory work of the ward, and accompanies the attending and resident physicians on ward rounds. The group has sixteen hours in the newborn service with the professor of pediatrics. They work in three antepartum clinics and one postpartum clinic weekly. One of these is an antisyphilitic therapy clinic. Intravenous arsenical therapy is given by the student under supervision. There is sixteen hours for obstetric and gynecologic pathology. Each student is furnished with a set of fifty slides illustrative of the more common pathologic conditions. The entire class has two hours weekly of lectures and quizzes. The subjects taught are the complications of pregnancy, labor and the puerperium. Examinations for promotion and graduation are individual and oral.

DISCUSSION

DR. ANDREWS ROGERS, Columbus, Ohio: A few years ago at Ohio State we tried to put beginning obstetrics in the sophomore year, the last quarter, because at that time we wanted to introduce the juniors into the antepartum and postpartum clinics. I had to fail approximately one third of the class. There is a difference. What those few months constitute, I don't know. They associate with doctors; they associate with senior students. They do something. I had to rearrange the course. Fortunately for those who failed, the course had to be given over again, so they lost no time. The next point I wish to mention is how to get more time, more material and more accommodations, such as were recommended by Dr. McCord. I got it years ago when I started at Ohio State. I worked night and day with the students, patients, group teaching and manikin instruction, and from the very first my whole plan and idea was to make it so attractive, so profitable to the future medical practitioners that they would demand, and when the students demand, one gets it.

The Teaching of Nutrition to Students of Medicine

DR. SALVATORE PABLO LUCIA and NINA SIMMONDS, Sc.D., San Francisco: This article will be published in full in THE JOURNAL.

FEBRUARY 15—MORNING

DR. CHARLES GORDON HEYD, New York, in the Chair

SYMPOSIUM ON GRADUATE MEDICAL EDUCATION

CHAIRMAN HEYD: For the last thirty years there has been created in this country a great public opinion on medical education and, without laws, without statutory regulation, there has been a constant improvement in the quality of medical education. We look to the future with a larger labor before us, that of the continuing education of the physician after graduation and of the graduate studies. There is no particular hurry that this great topic shall be settled in a few years. If the object of eternity is to make perfection, it is obvious that we should go slowly. In this work the American Medical Association will play its part as it has in the past, without any national subsidy because, as the late Mr. Gladstone said, progress in medicine has been largely due to the fact that the medical profession has maintained its independence.

Graduate Medical Education

DR. IRVIN ABELL, Louisville, Ky.: Graduate education may be divided into two categories: one dealing with the preparation and training of specialists, the other dealing with the continued education of those who are not specialists. The first category may be further subdivided into (*a*) the kind of training which is designed to prepare one for special practice and (*b*) the more advanced training which may be desired from time to time in order to keep the physician abreast of the latest developments in special and general fields. Group *a* training under this category must be conducted chiefly in large cities or in large clinics with abundant material. The twelve special examining boards for the certification of specialists have now established standards of training which are mandatory for those aspiring to be diplomates. These standards demand clinical training for varying periods beyond the intern year. Hospitals and clinics under university control now supply such facilities to a limited number but wholly inadequate to meet the demands of those aspiring to such training. The immediate problem is to induce qualified hospitals to establish a system of graduate training and to stimulate the development in the medical schools of a consciousness of their educational obligation to the hospitals in their immediate communities and a willingness to enter into the graduate training program in hospitals other than their own. The Council on Medical Education and Hospitals has designated certain hospitals as approved for the training of interns and residents without, however, specifying more than elementary requirements for such and without denoting the period of time to be consumed in such training. It will clarify the situation to designate both the period of time devoted to, and the character of, intern training best suited to form the basis on which further graduate training is to be superimposed. Also to determine whether rotating internships are desirable for candidates in all the specialites or whether internships in the specialties alone best prepare the candidates for continued study and training in their respective fields. A survey of the hospitals approved for residencies shows that the period devoted to the residency varies from one to seven years; 70 per cent of the residents receive but one to two, and 30 per cent from three to seven, years' training. Further, that the titles of the supposed resident are confusing, they being listed as resident, junior and senior residents, assistant resident, senior and junior interns, house officer, house physician and house surgeon. Uniformity of nomenclature is desirable, criteria for the qualification of hospitals for graduate training are essential and a definitely planned schedule of training for the graduate is necessary.

The second phase of the first category, the more advanced training which may be desired from time to time to keep the physician abreast of the latest developments in his special field, will of necessity find its exposition in the postgraduate schools and in the clinics and hospitals, the staff members of which are not only proficient in their respective fields but competent and able in imparting the newer principles and procedures of their specialty. There are at present more than fifty medical schools which enroll graduate students, and of these an increasing number are planning courses for the review of both the

old and the new. Specialized hospitals and the general hospitals which are highly departmentalized, possessing an adequate average patient census comprised of the types of patients required and used for teaching purposes, can well fill this want, subject to the supervision of the Commission on Graduate Medical Education.

The second category, namely, further education for those who are not specialists, presents complex problems in aiding the doctor who desires to add to his medical knowledge and to improve his skill as a practitioner. It may be divided into two phases, intramural and extramural. The intramural phase consists of courses offered by medical schools and university connected hospitals and should include clinical experience in addition to bedside lectures and demonstrations. Such courses, organized on a basis of practical instruction, offer the best plan of elevating the standard of efficiency of the practitioner if he will but come and seek it. Of definite value are the courses offered under the auspices of the county societies and given in approved hospitals by competent staff members consisting of short series of demonstrations and clinical expositions covering topics which the doctor meets in his daily work. These plans necessitate the absence of the practitioner from his location and entail the expense of fees and upkeep, stipulations that many for various reasons feel unable to meet. The extramural phase, that of carrying graduate training to the practitioner, is complex and difficult. A vital objection to most of the plans now in operation is that, clinical facilities not being available, the instruction is wholly didactic. Textbook reviews are of doubtful value, while practical talks by experienced teachers possess definite utility, particularly if featured by clinical demonstrations. Each state medical association could place this phase of graduate medical education in the hands of an interested committee which would be charged with the responsibility of arranging the program, of designating the centers and of selecting the clinicians. The program could be formulated with some idea of continuity so that definite subjects are assigned to stated meetings over a period of time, preferably on a yearly basis, or longer if desired. Certain cities or towns, strategically located over the state and by preference the site of a hospital or clinic, should be selected as centers with the idea of minimizing the time and inconvenience of the attendants. Clinicians to be selected from the medical schools and/or from the approved hospitals of the state should be of established reputation and competence in clinical teaching. The course or programs should be prepared with the aim of presenting the underlying and fundamental principles in each subject and their practical modern application. An interested local committee can and should provide clinical cases, which with demonstrations, illustrations and lantern slides afford the clinician the requisites for a clear and sound exposition of his subject. Conferences and round table discussions on the material presented will serve to elucidate many points and bring to the practitioner a better conception and appreciation of the difference between the old and the new. A statewide plan arranged along this or similar lines would involve no little effort but if faithfully carried out would bring to the vast majority of stay-at-homes medical education of genuine worth. To improve its standard of practice is a challenge to be met by organized medicine.

Opportunities for the Training of Future Internists

DR. J. H. MUSSER, New Orleans: This article will be published in full in THE JOURNAL.

Continuing Professional Education

DR. JAMES D. BRUCE, Ann Arbor, Mich.: This article will be published in full in THE JOURNAL.

DISCUSSION

DR. MORRIS FISHBEIN, Chicago: The speakers have outlined in each instance a commendable plan for the specialty that concerned them. In THE JOURNAL during the next twenty weeks we expect to have, each week, the plans of individual states, indicating how much graduate medical education is going on and has gone on in each state. These plans are developed largely under such systems as the one described by Dr. Bruce, which has been under the control of the state medical society, the university and other agencies correlated within the state. Dr. Bruce's presentation shows how it is possible for the physicians in any state, through their state medical society and their state university, to work out a suitable plan for carrying graduate medical education steadily forward. In the past thirty years the Council on Medical Education and Hospitals has spent well over a million dollars in an endeavor to raise the standards of medical education in the United States and to keep them at an exceedingly high level. That has been done out of funds contributed by the American Medical Association through the income derived from physicians and from the publications of the Association without a request to the federal government, to the state government, to any philanthropic agency or to any other body, either for funds or for direction as to how the work is to be done. It has been done with the single motive of raising the standard of medical practice and providing better medical care for all the people of the United States.

DR. TORALD SOLLMANN, Cleveland: I should like to discuss a point that concerns especially the medical schools, the requirement of the basic training in the specialist's training. As the proposals existed originally they seem to contemplate set courses for research in the basic sciences for all the different specialties, which would raise great difficulties for the medical schools. There are at present, I think, ten specialty boards. If the medical schools in their basic departments are to conduct ten courses for this specialty, that specialty, and so on, it would of course require a great deal of money and considerable additions to the staff. The money is difficult to obtain at this time, and the staff is impossible to obtain. The idea seems to be going around that every one going in for the specialties should be obliged to do a bit of research. I do not believe it is a good idea. Of course, the leaders in the subject certainly should have a research background, but to force a man who is going to practice a specialty in an everyday way to do research in which he probably has no particular interest, just for the purpose of securing a certificate, is, I think, a subversion of research. The proper approach to these specialties is the apprenticeship relation, where the master in the subject guides the studies of the one who is aspiring to become a practitioner of the subject. In that case the responsibility of laying out what work in the basic sciences he should do should lie altogether with the master. He should arrange the work, and a great deal of that work could be taken without arranging special courses. Dr. Abell mentioned, where the medical school affiliations were not possible, that such an approach of the master-apprenticeship relation there might be a substitute. I think that perhaps when this relation is possible the substitute may be better than what seems to be conceived by some as the ideal method. There is no best method of reaching anything of this sort. There are several approaches, and they may all lead there, according to the individual.

CHAIRMAN HEYD: As one reads the history of the development of medicine one can readily determine where certain influences came in that restrained the development and progress of medicine. It was when agencies of the government legalized the control of medicine through guilds, and it was a matter of record that men were prevented from practicing medicine because they doubted the infallibility of Galen. If medical progress owes anything to influences that arose in society, it has been that the profession has been untrammeled in the development of its objectives. There seems to be an inebriety to participate in extragovernmental functions with control in every division of human activity. It will be a sad day for society when there is placed from above an arbitrary control of bureaucracy that shall determine medical thought in this country.

The Rural Hospital: An Educational Center

DR. LESTER J. EVANS, New York: This article appeared in full in THE JOURNAL, March 26, page 945.

The Role of the Hospital in Advanced Professional Training

DR. A. C. BACHMEYER, Chicago: A comprehensive program for the advanced training of the physician can be formulated and properly conducted only through the cooperative efforts of medical associations, medical colleges, state medical boards

and hospitals. The hospital should participate in a number of these activities, among which the following may be briefly enumerated: (1) The internship; (2) the residency in special services; (3) the clinic and the clinical pathologic conference; (4) the seminar, the round table or panel discussion and the staff conference; (5) the presentation of demonstrations and exhibits; (6) the lecture, either single or in series; (7) the exhibition of motion pictures; (8) the conduct of short courses of the refresher type; (9) the development of medical libraries, with lending privileges; (10) the development of laboratories for investigation and research; (11) the conduct of prolonged courses of graduate study requiring periods of residence at college and hospital.

If the standards of medical practice in the institution, small or large, do not measure up to the requirements prescribed, the hospital is not providing proper service and certainly should not be permitted to undertake educational activities. From this it would appear that our national societies are confronted with the serious and difficult task of elevating the standards of service in these many institutions.

American hospitals, with some exceptions, are not educational institutions. Boards of management frequently become perturbed when educational activities are proposed, though it is generally acknowledged that the conduct of clinical teaching in a hospital is a guaranty of a high standard of professional service. It should not, however, be difficult to convince hospital authorities that in supporting educational endeavors their institution will be providing a more comprehensive service to the community than if they provide only for the immediate care of the patient, no matter how fine the quality of that care may be.

There are 712 hospitals on the approved lists for intern training. These institutions provide a total of 7,167 intern positions—far more than are ordinarily required each year for the graduates of the medical colleges. Though, with few exceptions, all medical graduates are now serving internships in hospitals approved by the Council, the testimony of large numbers leads one to believe that the educational opportunities offered are far from satisfactory. The deficiency lies in the absence of an organized program of training for the intern. The situation merits particular attention, for postgraduate education begins with the intern year. There is first a need for an understanding of the purpose of the internship. It is particularly during this period of the physician's career that he should be encouraged to undertake independent study and to develop his own initiative in constantly pursuing his education. Although the exigencies of practice occupy the time of many staff members, a larger number could devote more time to the needs of the intern and assist in his instruction if the necessities of the situation were brought home to them. Leadership must be provided by the staff and the local medical society.

Four hundred and thirty-eight hospitals, offering 3,202 residencies in thirty-three divisions of medical practice, are approved by the Council on Medical Education and Hospitals. The Boards of Medical Specialties have developed definite requirements for training during the residency. There remains, however, great variation in the value of this training. There is need for more organization as to content of service and opportunities for professional advancement.

Though only a small proportion of the hospitals can participate in these first two steps of postgraduate education, every hospital in which medical practice is conducted on a proper plane can assist in the continued education of the physician. It is this phase of the program that requires greatest development. The local medical societies can be of great assistance. In many communities their leadership and cooperative planning will be productive of greater accomplishments than if each hospital plans for itself and endeavors to develop a program without regard to the facilities and opportunities available in other institutions.

DISCUSSION

DR. AUSTIN A. HAYDEN, Chicago: I was glad to note Dr. Bachmeyer's emphasis on leadership in hospital administration and in intern training and medical education. That leadership should be focused along the line of medical coordination of the various functions that hospitals and doctors are able to give the public, and to give the student as a teaching factor. The classification of hospitals which Dr. Bachmeyer used is good, but it doesn't go far enough. For instance, in rural communities there are many agencies, aside from the hospital, the small hospital as a general rule, that should be taken into consideration. It should be the purpose of the American Medical Association and the American College of Surgeons, and whatever other organizations attempt to standardize or regulate these institutions, to regulate them according to their locality and according to the possibilities for service and for regulation that they present. I think hospitals might be divided roughly into rural, urban and teaching. A rural hospital may be one or two beds up to a dozen beds in the back of a doctor's office. It is possible for that hospital to render good service, provided it renders the service it is capable of rendering from the standpoint of its physical equipment and from the standpoint of its professional personnel. I had the opportunity of visiting with Dr. William Allen Pusey in Elizabethtown, Ky., a town of about 6,000 people. Elizabethtown is a suburb, really, of Louisville. Elizabethtown also has suburbs, and one of those is Millersville. To go to Millersville we had to cross three creeks. There was no bridge and we went over on a ferry boat. In Millersville there were about forty people, I imagine. There was a drug store owned by a doctor, and some hospital facilities, beds, microscopes, a considerable amount of laboratory equipment, and such. Across the street was a filling station, which is also an adjunct of that hospital. It has largely been made so by the publicized efforts of the American Red Cross, by which they had established certain first aid facilities, or attempted to do that, in filling stations. Here you have the filling station, the drug store and hospital constituting the immediate medical facilities and hospital facilities of that town of forty or fifty people. Those things are absolutely all right, and it would be a great injustice to the people of that community if any organization were to try to standardize things in such a way that it would discredit those small places. If you hook Millersville up with Elizabethtown, and then hook Elizabethtown up to the hard road to Louisville with proper ambulance service—the proper ambulance doesn't need to be much more than a bed in an automobile—you have immediately equipped that little inland town with pretty fair hospital service and excellent medical service. The urban hospital, in general terms, might be divided into the open staff and the closed staff, and a staff that is in between. As usual, the in-between proposition greatly outnumbers either of the others. The closed staff would be represented in Chicago by institutions like the Presbyterian Hospital, where every man in attendance is a teacher at a medical school. As Dr. Bachmeyer says, the total number of beds under this classification of hospitals is small in comparison to the total number of other administered beds, but the function of that is definite in the teaching of undergraduate medical students. But the open-closed, the closed-open (whatever term you like to use) hospital that has been approved is where the vast majority of interns will finally find their place. Dr. Bachmeyer properly said that the opportunities for special training in those is not to be compared with the opportunities in a larger hospital. I saw, at St. Joseph's Hospital this morning, a boy 15 years of age who woke up blind in the right eye about three days ago, just out of a clear sky. With that history, the thing that occurred to me was a retinal embolism. He had a cherry macula, and the retinal arterial circulation was practically blocked off. I had every intern in the hospital look into that eye. I have never seen a half dozen of those cases in my experience. I told those boys the only thing they should know about that was possibly the ability to recognize it but, more important perhaps, to have the ability and the knowledge necessary to turn that over to some one who would see a few of those cases occasionally; in other words, the name, address and telephone number of a competent individual who sees such things occasionally. On the other hand, in the routine things that come into hospitals in fair numbers they can be trained satisfactorily in a great many of the hospitals to which Dr. Bachmeyer has referred.

(To be continued)

Medical Examinations and Licensure

COMING EXAMINATIONS

STATE AND TERRITORIAL BOARDS

Examinations of state and territorial boards were published in THE JOURNAL, April 2, page 1134.

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: *Parts I and II.* Examinations will be held in all centers where there is a Class A medical school and five or more candidates who wish to write the examination, May 9-11 (limited to a few centers), June 20-22, and Sept. 12-14. Ex. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia.

SPECIAL BOARDS

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: *Written examination for Group B applicants* will be held in various cities throughout the country April 16. *Oral examinations for Group A and B applicants* will be held at San Francisco, June 13-14. Sec., Dr. C. Guy Lane, 416 Marlboro St., Boston.

AMERICAN BOARD OF INTERNAL MEDICINE: *Written examination* will be held at various centers of the United States and Canada, Oct. 17. *Final date for filing applications is Sept. 1.* Chairman, Dr. Walter L. Bierring, 406 Sixth Ave., Suite 1210, Des Moines, Iowa.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *General oral, clinical and pathological examinations for all candidates (Groups A and B)* will be conducted in San Francisco, June 13-14. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh (6).

AMERICAN BOARD OF OPHTHALMOLOGY: San Francisco, June 13; Washington, D. C., Oct. 8; Oklahoma City, Nov. 15. *All applications should be filed immediately and case reports, in duplicate, must be filed not later than sixty days before the date of examination.* Sec., Dr. John Green, 3720 Washington Blvd., St. Louis, Mo.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: Chicago, June 10-11. Sec., Dr. Fremont A. Chandler, 6 N. Michigan Ave., Chicago.

AMERICAN BOARD OF OTOLARYNGOLOGY: San Francisco, June 10-11. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

AMERICAN BOARD OF PATHOLOGY: Philadelphia, May 5-6. Sec., Dr. F. W. Hartman, Henry Ford Hospital, Detroit.

AMERICAN BOARD OF PEDIATRICS: New York City, May 3-4; San Francisco, June 12; Detroit, October; Rochester, N. Y., November; and Oklahoma City, November 15. Sec., Dr. C. A. Aldrich, 723 Elm St., Winnetka, Ill.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY: San Francisco, June 11. Sec., Dr. Walter Freeman, 1028 Connecticut Ave. N.W., Washington, D. C

AMERICAN BOARD OF RADIOLOGY: San Francisco, June 10-12. Sec., Dr. Byrl R. Kirklin, 102-110 Second Ave. S.W., Rochester, Minn.

AMERICAN BOARD OF UROLOGY: San Francisco, June 11-13. Sec., Dr. Gilbert J. Thomas, 1009 Nicollet Ave., Minneapolis.

Minnesota October Report

Dr. Julian F. Du Bois, secretary, Minnesota State Board of Medical Examiners, reports the oral, written and practical examination held at Minneapolis, Oct. 19-21, 1937. The examination covered 12 subjects and included 60 written questions. An average of 75 per cent was required to pass. Sixty-six candidates were examined, all of whom passed. Seven physicians were licensed by reciprocity and four physicians were licensed by endorsement. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Stanford University School of Medicine		(1936)	88.6
University of California Medical School		(1936)	89
University of Colorado School of Medicine		(1931) (1936)	84.5, 86.4
Northwestern University Medical School		(1935) 88.6, (1937)	84.5
Rush Medical College		(1936) 88, (1937)	84.5, 86.6, 87.3
School of Medicine of the Division of the Biological Sciences		(1937)	85.4
University of Illinois College of Medicine		(1936)	91.2
Indiana University School of Medicine		(1934)	87.6
University of Kansas School of Medicine		(1936)	83.5
Tulane University of Louisiana School of Medicine		(1935)	81.5, 91
Johns Hopkins University School of Medicine		(1934)	87.6, 89.6
Harvard University Medical School		(1932) (1934)	86.2, 86.1, 87.4, 87.4, (1935) 85.5, 89.2
University of Michigan Medical School		(1928)	85.1
Wayne University College of Medicine		(1935)	89.5
University of Minnesota Medical School		(1931) (1934)	85, 87.2, (1935) 83.4, 89.3, (1936) 78.5, 85.2, (1937) 80.4, 81.3, 82, 82.1, 82.6, 83.5, 84.5,* 85,* 85.1,* 85.4,* 86.5, 87.2,* 88.2,* 88.5, 90
University of Nebraska College of Medicine		(1936)	86.6
Syracuse University College of Medicine		(1930)	85.6
University of Rochester School of Medicine		(1934) (1935)	84.6, 86.1, 90.6
University of Cincinnati College of Medicine		(1932)	88.2
University of Oregon Medical School		(1935)	88.4
University of Pittsburgh School of Medicine		(1929) (1936)	85.5, 86.5
University of Texas School of Medicine		(1935)	85
Medical College of Virginia		(1934)	84
University of Virginia Department of Medicine		(1934)	88.3
University of Wisconsin Medical School		(1933) 85.5, (1936)	82.6
University of Manitoba Faculty of Medicine		(1932) 88.5, (1934)	84.2
Queen's University Faculty of Medicine		(1929) 85.2, (1932)	87.1
McGill University Faculty of Medicine		(1934)	89

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Northwestern University Medical School		(1936)	New Jersey
Tulane University of Louisiana School of Medicine		(1935)	Louisiana
University of Nebraska College of Medicine		(1932)	Nebraska
Jefferson Med. College of Philadelphia		(1934) Penna., (1936)	California
Marquette University School of Medicine		(1936)	Wisconsin
University of Wisconsin Medical School		(1935)	Wisconsin

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
College of Medical Evangelists		(1937)	N. B. M. Ex.
Rush Medical College		(1937)	N. B. M. Ex.
University of Minnesota Medical School		(1937, 2)	N. B. M. Ex.

* This applicant has received the M.B. degree and will receive the M.D. degree on completion of internship.

New Jersey Endorsement Report

Dr. James J. McGuire, secretary, State Board of Medical Examiners, reports 140 physicians licensed by endorsement during 1937. The following schools were represented:

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
University of Arkansas School of Medicine		(1936)	Arkansas
Yale University School of Medicine		(1934)	N. B. M. Ex.
George Washington University School of Medicine		(1931), (1935)	New York
Georgetown University School of Medicine		(1933, 2), (1934)	Maryland, (1935) District of Columbia, (1935) New York, (1935, 2), (1936) N. B. M. Ex.
Howard University College of Medicine		(1926) (1933)	Dist. Colum., Maryland
University of Georgia Medical Department		(1925)	Georgia
University of Illinois College of Medicine		(1936)	Illinois
Indiana University School of Medicine		(1936)	Indiana
State University of Iowa College of Medicine		(1930), (1935), (1936)	Iowa
University of Louisville School of Medicine		(1924), (1936, 2)	Kentucky
Tulane University of Louisiana School of Medicine		(1936)	N. Carolina
Johns Hopkins University School of Medicine		(1928), (1934)	Maryland, (1932) N. B. M. Ex.
University of Maryland School of Medicine and College of Physicians and Surgeons		(1932) (1935), (1936)	New York, Maryland
Boston University School of Medicine		(1924)	New York
Harvard University Medical School		(1921) Ohio, (1923)	New York
University of Michigan Medical School		(1929), (1935)	Michigan
University of Minnesota Medical School		(1935)	N. B. M. Ex.
St. Louis University School of Medicine		(1936, 3)	Missouri
Washington University School of Medicine		(1923) (1932), (1935)	California, New York
Creighton University School of Medicine		(1931) (1935)	New York, Ohio
University of Nebraska College of Medicine		(1928)	New York
Albany Medical College		(1928)	New York
Columbia Univ. College of Physicians and Surgeons		(1901), (1928), (1935, 4)	New York, (1935, 2), (1936) N. B. M. Ex.
Cornell University Medical College		(1934), (1936)	New York, (1934), (1935) N. B. M. Ex.
Long Island College Hospital		(1920)	New York
Long Island College of Medicine		(1932, 2), (1933), (1934), (1935, 2), (1936, 2)	New York
New York Homeopathic Medical College and Flower Hospital		(1926), (1932)	New York
New York Medical College and Flower Hospital		(1936, 3)	N. B. M. Ex.
New York University, University and Bellevue Hospital Medical College		(1914), (1915, 2), (1931, 2), (1932, 2) (1933), (1934, 5)	New York, (1934) N. B. M. Ex.
New York University College of Medicine		(1935)	N. B. M. Ex., New York
University of Buffalo School of Medicine		(1930), (1935)	New York
University of Rochester School of Medicine		(1935)	New York
Eclectic Medical College, Cincinnati		(1936, 2)	Ohio
Ohio State University College of Medicine		(1933)	Ohio
Starling Medical College, Ohio		(1901)	Ohio
Hahnemann Medical College and Hosp. of Philadelphia		(1926), (1931), (1933), (1935)	Pennsylvania, (1936, 3) Maryland
Jefferson Medical College of Philadelphia		(1920), (1921), (1930)	Pennsylvania
Medico-Chirurgical College of Philadelphia		(1914)	Penna.
Temple University School of Medicine		(1931), (1935)	New York, (1933) Pennsylvania, (1936) North Carolina
University of Pennsylvania Department of Medicine		(1900)	Penna.
University of Pennsylvania School of Medicine		(1914) (1932)	Penna., New York, (1935) Indiana
Woman's Medical College of Pennsylvania		(1935)	N. B. M. Ex.
Meharry Medical College		(1932) (1934)	Georgia, N. B. M. Ex., (1935), (1936) Tennessee
Baylor University College of Medicine		(1921), (1934)	Texas
University of Vermont College of Medicine		(1936)	Vermont
Medical College of Virginia		(1935)	N. B. M. Ex., (1936) Virginia
University of Alberta Faculty of Medicine		(1932)	New York
Dalhousie University Faculty of Medicine		(1935)	N. B. M. Ex.
University of Toronto Faculty of Medicine		(1911), (1928)	New York
Laval University Faculty of Medicine		(1932)	Maine
McGill University Faculty of Medicine		(1935)	Penna.
Friedrich-Wilhelms-Universität Medizinische Fakultät, Berlin		(1932)*	N. B. M. Ex.
Johann Wolfgang Goethe-Universität Medizinische Fakultät, Frankfurt-am-Main		(1933)	New York
Medizinische Akademie Düsseldorf		(1933)	Colorado
Universität Leipzig Medizinische Fakultät		(1927)*	New York
Regia Università degli Studi di Pavia. Facoltà di Medicina e Chirurgia		(1935)*	Missouri

Regia Università di Napoli Facoltà di Medicina e Chirurgia .....(1920)* New York, (1923) Texas
Licentiate of the Royal College of Physicians, of the Royal College of Surgeons, Edinburgh, and of the Royal Faculty of Physicians and Surgeons, Glasgow..(1936) New York
University of Edinburgh Faculty of Medicine.....(1932) Maine

* Verification of graduation in process.

Kentucky December Examination

Dr. A. T. McCormack, secretary, State Board of Health of Kentucky, reports the written examination held at Louisville, Dec. 7-9, 1937. The examination covered 11 subjects and included 110 questions. An average of 70 per cent was required to pass. Three candidates were examined, all of whom passed. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
University of Louisville School of Medicine		(1937)	85
Long Island College of Medicine		(1936)	85
Baylor University College of Medicine		(1937)	82

Thirteen physicians were licensed by reciprocity from September 23 through December 23. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Emory University School of Medicine		(1926)	Georgia
Rush Medical College		(1937)	Illinois
Johns Hopkins University School of Medicine		(1932)	Maryland
Harvard University Medical School		(1935)	Tennessee
University of Michigan Medical School		(1932)	Michigan
University of Nebraska College of Medicine		(1920)	Nebraska
Columbia Univ. College of Physicians and Surgeons		(1924)	New York
Ohio State University College of Medicine		(1932)	Ohio
University of Cincinnati College of Medicine		(1937)	Illinois
Meharry Medical College		(1935), (1936)	Tennessee
Medical College of Virginia		(1931)	Virginia
University of Virginia Department of Medicine		(1935)	Tennessee

Michigan October Examination

Dr. J. Earl McIntyre, Michigan State Board of Registration in Medicine, reports the written examination held in Lansing, Oct. 13-15, 1937. The examination covered 14 subjects and included 100 questions. An average of 75 per cent was required to pass. Twenty candidates were examined, 19 of whom passed and one failed. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Yale University School of Medicine		(1926)	82.3
George Washington University School of Medicine		(1936)	82.6
Loyola University School of Medicine		(1937) 80.9,	84.7*
Northwestern University Medical School		(1937) 79.5,* 83.1,*	83.8
Rush Medical College		(1936) 87, (1937) 83.1,	85.2
University of Illinois College of Medicine		(1936)	82.4
Tufts College Medical School		(1923)	85.3
University of Minnesota Medical School (1937) 83.5, 87.5		(1936)	83.4,†
Temple University School of Medicine		(1936)	86†
University of Pennsylvania School of Medicine		(1936)	85.9†
McGill University Faculty of Medicine		(1937)	82.2†
University of Moscow Faculty of Medicine		(1911)	76.2‡

School	FAILED	Year Grad.	Per Cent
National University of Athens School of Medicine		(1917)	55.6

Seventy-eight candidates were licensed by indorsement from August 2 through December 30. The following schools were represented:

School	LICENSED BY INDORSEMENT	Year Grad.	Indorsement of
College of Medical Evangelists		(1937)	California, N. B. M. Ex.
University of California Medical School		(1929)	California
Yale University School of Medicine		(1935)	California, N. B. M. Ex.
Howard University College of Medicine		(1935)	Maryland
Emory University School of Medicine		(1936)	Georgia
University of Georgia School of Medicine		(1933)	Georgia
Loyola University School of Medicine (1935)		(1932)	Illinois
Northwestern University Medical School		(1930), (1933)	Illinois
Rush Medical College (1937)		(1931, 2), (1932), (1935), (1936),	Illinois
School of Medicine of the Division of the Biological Sciences		(1935)	Illinois
University of Illinois College of Medicine (1931, 3), (1932), (1935, 3), (1936), (1937)		(1931)	Missouri, Illinois
Indiana University School of Medicine (1935, 2), (1936, 2)		(1932),	Indiana
State University of Iowa College of Medicine (1934), (1935), (1936, 2)		(1931, 2),	Iowa
University of Louisville School of Medicine		(1932)	Kentucky
Tulane University of Louisiana School of Medicine (1933)		(1932)	Louisiana, N. B. M. Ex.
Johns Hopkins University School of Medicine (1935)		(1933)	N. B. M. Ex., North Carolina, (1936) Maryland
Harvard University Medical School (1934, 2)		(1934)	Georgia, N. B. M. Ex., (1936) Texas
University of Minnesota Medical School		(1929), (1935)	Minnesota
St. Louis University School of Medicine (1930)		(1914)	Oklahoma, Missouri, (1932) Ohio, (1936) Connecticut
Washington University School of Medicine		(1935)	Illinois
Creighton University School of Medicine (1936)		(1935)	N. B. M. Ex., Nebraska
University of Nebraska College of Medicine		(1927)	Nebraska
University of Rochester School of Medicine		(1936)	N. Carolina
Duke University School of Medicine		(1934)	N. Car., (1935) N. B. M. Ex.
Ohio State University College of Medicine		(1936)	Ohio
University of Cincinnati College of Medicine (1935), (1936)		(1928),	Ohio
Hahnemann Medical College and Hospital of Philadelphia		(1936)	Penna.
University of Pennsylvania School of Medicine		(1927)	Wisconsin
Woman's Medical College of Pennsylvania		(1936)	Ohio
Meharry Medical College		(1916)	Arkansas, (1935) Tennessee
University of Tennessee College of Medicine (1933)		(1922)	Tennessee, Mississippi
University of Virginia Department of Medicine		(1933)	Virginia
Marquette University School of Medicine		(1935)	Wisconsin
University of Wisconsin Medical School		(1927), (1935)	Wisconsin

* This applicant has completed the medical course and will receive the M.D. degree on completion of internship. License has not been issued.
† License has not been issued.
‡ Verification of graduation in process. License has not been issued.

North Carolina December Report

Dr. B. J. Lawrence, secretary, North Carolina State Board of Medical Examiners, reports 24 physicians licensed by endorsement at the meeting held at Raleigh, Dec. 6, 1937. The following schools were represented:

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
University of Alabama School of Medicine		(1911)	Alabama
Emory University School of Medicine		(1932)	Georgia
Northwestern University Medical School		(1935)	Louisiana
Indiana University School of Medicine		(1932), (1936)	Indiana
University of Louisville School of Medicine		(1935)	Kentucky
Tulane University of Louisiana School of Medicine		(1932)	Mississippi
Columbia Univ. College of Physicians and Surgeons		(1932)	New York
Cornell Unversity Medical College		(1929)	New York
New York University, University and Bellevue Hospital Medical College		(1932)	New York
Syracuse University College of Medicine		(1905)	New York
Duke University School of Medicine		(1934), (1935)	N. B. M. Ex.
University of Oklahoma School of Medicine		(1936)	Oklahoma
Hahnemann Med. College and Hospital of Philadelphia		(1905)	Vermont
Jefferson Medical College of Philadelphia		(1932)	Penna.
Woman's Medical College of Pennsylvania		(1935)	N. B. M. Ex.
Meharry Medical College		(1934)	Tennessee
University of Tennessee College of Medicine		(1934)	Tennessee
University of Tennessee Medical Department		(1909)	Arkansas
Vanderbilt University School of Medicine		(1936)	N. B. M. Ex.
Medical College of Virginia		(1934), (1935)	Virginia
University of Virginia Department of Medicine		(1932)	Virginia

Louisiana December Report

Dr. Roy B. Harrison, secretary, Louisiana State Board of Medical Examiners, reports the written examination held at New Orleans, Dec. 9-11, 1937. The examination covered 12 subjects and included 100 questions. An average of 75 per cent was required to pass. Twenty-five candidates were examined, all of whom passed. Thirteen physicians were licensed by reciprocity. The following schools were represented:

School	PASSED	Year Grad.	Number Passed
University of Arkansas School of Medicine		(1937)	1
Howard University College of Medicine		(1934)	1
Rush Medical College		(1931), (1937)	2
University of Illinois College of Medicine		(1937)	1
Louisiana State University Medical Center		(1936), (1937)*	2
Tulane University of Louisiana School of Medicine (1937, 3), (1937, 2)†		(1936),	6
University of Minnesota Medical School		(1937)*	1
St. Louis University School of Medicine		(1937)	1
University of Oregon Medical School		(1937)	1
Meharry Medical College		(1936, 2), (1937)	3
Memphis Hospital Medical College		(1908)	1
Baylor University College of Medicine		(1937, 3)	3
University of Texas School of Medicine		(1937)	1
University of Wisconsin Medical School		(1937)	1

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Emory University School of Medicine		(1931)	Michigan
State University of Iowa College of Medicine		(1928)	Iowa
University of Louisville School of Medicine		(1927)	Kentucky
Tulane University of Louisiana School of Medicine (1936)		(1925)	Mississippi, New Jersey
University of Michigan Medical School		(1931)	Michigan
Jefferson Medical College of Philadelphia		(1935)	W. Virginia
University of Pennsylvania School of Medicine (1934)		(1925)	Penna., California
University of Tennessee College of Medicine (1932), (1935)		(1931)	Mississippi, Tennessee
Baylor University College of Medicine		(1935)	Texas

* This applicant has received the M.B. degree and will receive the M.D. degree and Louisiana license on completion of internship.
† Permanent license withheld pending completion of United States citizenship.

Book Notices

Practical Proctology. By Louis A. Buie, A.B., M.D., F.A.C.S., Head of Section on Proctology, The Mayo Clinic. Cloth. Price, $6.50. Pp. 512, with 152 illustrations. Philadelphia & London: W. B. Saunders Company, 1937.

The author has followed a well made outline in his discussions and has written a volume in clear, readable English, thoroughly punctuated with his personality. He has wisely avoided the encyclopedic type of textbook, as well as historical and theoretical temptations, and has recorded his own beliefs and his proved technic. The entire subject matter has been reinforced by the statistics of a large clinic and by the assistance and cooperation of many professional associates. In this way bacteriologic topics and the chapter on anesthesia, parasitology, therapeutics and surgical technic become complete and authoritative. Few photographic illustrations are used, fortunately, the text being well supplied with excellent diagrammatic illustrations made by experts in anatomic drawing. These enhance the value of the volume notably. The author has taken pains to differentiate between anal and rectal lesions and given a clear cut terminology of fistula. The willingness of the author to question established customs and practices and his ability to devise new procedures for operations on the rectum or anus are commendable and make for progress. However, there will be those who disagree with the dicta that local and spinal anesthesia should be tabu, that an approaching abscess should not be incised until near rupture time, that the injection of a fistula tract serves no end, and that the lithotomy position should be discarded. Pruritus ani is discussed sanely and with a complete review of the accepted methods of treatment. The etiology of this condition has resisted a favorable analysis. The author has made a noteworthy attention to the alcoholic injections for a relief treatment, probably overstressing its dangers and difficulty in application. The chapter should be read by every practitioner. The discussion of ulcerative colitis is voluminous and authoritative. It represents the combined efforts of a large group and reviews thoroughly the unfinished study of a large subject begun by Hale White in 1888. The colored illustrations in this chapter are especially instructive and completes the text to the satisfaction of the enterologist and the novitiate in medicine. The critical reader would have enjoyed a review of some of the obscure causes of pain referable to the rectum and anus as produced by coccycodynia, sacral neuritis and the pressure of chordomas. The volume is a distinct addition to proctologic literature.

Behind These Columns. Mellon Institute Dedication of the New Building to Science and Humanity for Andrew W. Mellon and Richard B. Mellon. Boards. Pp. 55, with 24 illustrations. Pittsburgh, Pennsylvania, 1937.

This volume was prepared for the dedication of the new building of the Mellon Institute last year. It comprises a historical review of the institute and a summary of the work that has been done, and a description of the building. Robert Kennedy Duncan, a scientist interested in literary work, conceived the idea that was developed with the aid of the Mellons. Duncan attended the sixth International Congress of Applied Chemistry in Rome in 1906 and came back with the basic idea. He accepted the chair of industrial chemistry at the University of Kansas and there arranged for the first industrial fellowship. His writings attracted the attention of Andrew and Richard Mellon in 1909. Later he was invited to head a department of industrial research at the University of Pittsburgh, where the industrial fellowships began operating March 1, 1911, in a frame building, with funds provided by the Mellons. This experiment was followed by the founding of the Mellon Institute of Industrial Research at the university in March 1913. Duncan was authorized to design a modern headquarters with laboratory facilities, but he died before the building was completed. The institute carried on its work as a part of the University of Pittsburgh until 1927, and since then it has been managed by its own board of trustees. The building, which inspired the title of the book, is a beautiful monument to the founders. Mellon Institute is one of the first institutions in this country founded to blaze the research trail for industries. It is a nonprofit organization, although part of the burden of research is borne by funds appropriated by individual firms which finance industrial fellowships. The research is organized on a contract basis. A problem is presented by a person or company interested in its solution and the scientist needed to solve the problem is engaged by the Mellon Institute. The fellow is given the broadest facilities for accomplishing the research. The institute has demonstrated to about 4,000 American companies that properly conducted research can be productive. Since 1911 there have been 1,150 industrial fellowships on 279 different subjects. About 650 novel processes and products have been invented or developed by the fellows. Some of them have afforded sufficient basis to create new industries and others sufficient basis to build new branches of existing industries. The chrome plating of aluminum was developed to commercial applicability at the institute. Butane gas for metal cutting operations, a dental cement, a moth-proofing agent, a process for the recovery of cuperous sulfide from copper ore, improved roofing materials, better varnishes, perfection of sodium metaphosphate as a boon to laundering, a new safety fuse, a shoe leather impregnated chemically to make it better wearing, and many other products were evolved by fellowship researches. The institute maintains a department of research in pure chemistry. Some of the research bearing on public health has pertained to smoke abatement, the cause of dental caries, nutrition, immunology and industrial dusts. Since 1930 the Department of Research in Pure Chemistry has studied the cinchona alkaloids in cooperation with medical scientists in some of the hospitals in Pittsburgh. Research on the treatment of pneumonia in cooperation with a hospital has been in progress. The new home of the Mellon Institute will bring to bear more intensive effort in the fields of chemistry, biochemistry and biology, as well as in the field of pure science.

Health Insurance: The Next Step in Social Security. By Louis S. Reed. Cloth. Price, $3. Pp. 281. New York & London: Harper & Brothers, Publishers, 1937.

From the first two paragraphs in the preface to the end of this work, Mr. Reed indulges in propaganda on behalf of compulsory insurance. He admits frankly that he is a propagandist and he apparently is influenced to modify the material if it fails to fit the propaganda. When he says that the "medical profession had taken an adamantine position in defense of the status quo" he is stating an untruth and he is making propaganda. The author admits frankly that there is little originality in his work and that most of it is the outcome of his association with the Committee on the Costs of Medical Care, including I. S. Falk, Harry Moore, Nathan Sinai and some of the others. Abraham Epstein has set him right on several points and Michael Davis has given him counsel and encouragement. From this array of alleged authorities in the field of medicine—not one of whom is a physician—the medical reader will know how to evaluate this work. The various employees who earned their livings from the Committee on the Costs of Medical Care during the term of its existence are continuing to turn this old material over and over, squeezing the lemon to its last drop of juice. It would be a work of many hours and require a great deal of space to list carefully all the misrepresentations in this volume. For the high school students who are continuing to debate the subject of health insurance at the order of their teachers, this volume should be a most useful reference work. Mr. Reed's answer to the problem of medical care is some system by which the people in the United States with incomes below $3,000 a year will be compelled to save against the cost of sickness and will be helped by government money when the compulsion is inadequate. His answer to the medical problem is therefore compulsory sickness insurance and federal subsidies. What happens to the democratic system of government under these compulsory systems does not apparently concern him. He is willing to begin slowly and he recognizes, for example, that any attempt to give the public satisfactory dentistry would bankrupt the system. Perhaps when an attempt is made to give all of the nation complete medical service at government expense, these economists will discover that it is possible to bankrupt the nation.

The Sex Life Before and After Marriage. By William S. Sadler, M.D., Director, The Chicago Institute of Research and Diagnosis, and Lena K. Sadler, M.D., Associate Director, The Chicago Institute of Research and Diagnosis. Volume I: Sexual Hygiene. Volume II: Marriage. Cloth. Price, $2.95, per set. Pp. 129; 133-334. Chicago: American Publishers Corporation, 1938.

In these two volumes the authors have given the reader a comprehensive picture of the sex function and its relationships to individual living and to marriage. In the first three chapters consideration is given to the anatomy, physiology and biology of the sex impulse, following which the authors proceed to a discussion of masturbation and autoeroticism. At this point, in chapters 5 through 8, they deal with sexual deviations, abnormalities and neuroses, and in chapter 9 with venereal diseases. This chapter is followed by a glossary, which closes the first volume. In volume II are chapters covering the art of making love, the choice of a partner, courtship, marriage as an institution, the cultural and other factors in marriage outside of sex, marital sex experiences and special problems, principal sources of marital trouble, contraception and birth control, the menopause and an expression of their opinions with relation to the modern sex problem. The treatment is complete, exhaustive and, for the most part, accurate. The discussion of how sex is determined is inadequate except to a reader who understands cell structure and cell division. The same criticism applies to the description of the Aschheim-Zondek test, in which the test is attributed to the pituitary hormone instead of to the placental hormone. Under the heading of "Venereal Disease Prevention," recommendation is made for the use of "lysol"; it would have been equally effective, and much more advisable, to use the designation saponated solution of cresol. The statements about the relationship of lactation subsequent to pregnancy are confusing, though a careful reading makes it evident that the authors wish to discredit the popular idea that lactation always prevents pregnancy. The male climacteric, referred to in volume II, is not generally accepted. These should be useful and informative books for serious readers. They contain a good deal of repetition and appear to overemphasize the abnormal. Probably for the average reader the work would have been improved by greatly minimizing the references to the abnormal. The books are particularly to be commended for the conservative attitude toward freudism, giving it due credit for contributions to methods of investigation and treatment of the neuroses but recognizing factors other than sex as a possible basis for the neuroses. The authors express a philosophy which endorses the monogamous conception of marriage and yet at the same time display a broad sympathy for individuals whose sexual problems and urges bring them into conflict with society. Their chapter on contraceptives properly emphasizes the one inescapable fact that there is as yet no completely reliable contraceptive method except abstinence.

The Laboratory Diagnosis of Syphilis: The Theory, Technic, and Clinical Interpretation of the Wassermann and Flocculation Tests with Serum and Spinal Fluid. By Harry Eagle, M.D., Lecturer in Medicine, Johns Hopkins University Medical School, Baltimore. With foreword by J. Earle Moore, M.D., Associate in Medicine, Johns Hopkins University, Baltimore. Cloth. Price, $5. Pp. 440, with 27 illustrations. St. Louis: C. V. Mosby Company, 1937.

In his attack on the rather considerable task to which he set himself (as detailed in the subtitle) the author of this monograph maintains a high degree of objectivity. He does not attempt to "prove" anything and thus succeeds in establishing a body of carefully documented facts and skilfully drawn conclusions which should be of great service to the practicing clinician and serologist, and of use to the investigator. The text is composed of a historical introduction, six parts and five appendixes, and concludes with a selected bibliography of approximately one thousand titles. Parts I and II deal with the basic physicochemical phenomena which underlie the application of the complement fixation test and the flocculation phenomenon to the serodiagnosis of syphilis. Each part ends with a description of acceptable technics for performing the respective types of test. In addition, part II contains a searching critical examination of the methods for choice of an optimum flocculation test, with a succinct summary. Part III is devoted to methods of examination of the cerebrospinal fluid, and in part IV the author deals briefly with a variety of miscellaneous laboratory tests for syphilis. Parts V and VI are given to discussion of the clinical evaluation of serologic reports-both from the point of view of the theoretical considerations involved and with regard to the statistical results of the competitive serologic conferences.

This routine description of the contents of Dr. Eagle's monograph gives no idea of its true worth. It is unique in that in a single volume it deals both with the laboratory and with the clinical aspects of the serodiagnosis of syphilis. This may seem of small importance until one remembers that there are few clinical syphilologists who are competent serologists and that there are almost no avowed serologists who are competent clinicians. Then the consummate value of this monograph becomes apparent. Here for the clinician are simple methods for judging the reliability of the serologic laboratory on which he depends and authoritative advice on the interpretation of the reports of serologic tests for syphilis. The practicing serologist will find quite as much of value. The chapters on technic are based on the personal experiences of the author and are presented without bias. There is a full index.

Eyestrain and Convergence. By N. A. Stutterheim, M.D., Part-Time Ophthalmic Surgeon to the Johannesburg School Clinic, Transvaal Education Department. Cloth. Price, 7s. 6d. Pp. 89, with 2 illustrations. London: H. K. Lewis & Co., Ltd., 1937.

For a number of years the author, through the pages of the *British Journal of Ophthalmology*, has reported studies on the ocular musculature in their relation to the position of the eyes and as to convergence. The present volume is aimed to provide a method of treatment for the common complaint of eyestrain. This method is not to be thought of as an additional procedure to the procedures already available but is initiated as a long overdue reform. The author states that the principles of this new method are based on physiology and leaves it to his medical colleagues to decide whether it is worthy. The need for this new idea is based on the premise that, in spite of the complaint of eyestrain, modern methods of refraction and muscle therapy yet leave many persons, more especially those seen in private practice, with no relief from their symptoms of eyestrain. Evidently this is true in South Africa. The new concept deals with the kinetic factor of binocular vision. The static factors (so called) of errors of refraction and muscular balance are rejected as far as their traditional concepts are concerned. The soundness of this new kinetic binocular consideration and the principle of kinetic treatment are established by the undeniable and consistently good results in more than a thousand cases. The importance of convergence is brought forward by a discussion of its center in the midbrain and a citation of its prominence in the animal world. Stutterheim believes that the convergence is based rather on a tensor system than on contraction and inhibition of antagonistic muscles. This theory is exemplified by the good convergence when the external rectus is practically absent and by some of Sherrington's experiments. The primary position is conceded to be one in which the two eyes are slightly divergent. The author shows that there is a difference in voluntary adduction of the eyes and kinetic convergence. The term "asthenovergence" is used to denote the difficulty found in persons complaining of eyestrain. The method of testing for this defect is as follows: "In the examination of cases of eyestrain, insufficiency of convergence, which I have called asthenovergence, is regularly found. The person is tested for power range of convergence while sitting opposite a black cloth 4 feet square at a distance of 5 or 6 meters. In the center of the cloth an oblong strip of white cardboard, 7.5 by 1.0 cm., is fixed and serves as the object of vision. It is placed in the vertical position in the tests for horizontal convergence and in the horizontal position in the tests for vertical convergence. The tested person's head is supported by a rest for the chin and one for the forehead. Into the forehead rest a trial frame is fixed for holding the single prisms. The test is done by successively placing prisms of increasing strength (*but not revolving prisms*) in front of the eyes until the images no longer merge but remain apart. The difference between the separate prisms I use for the tests on horizontal convergence is 1 degree of prism; for the tests

on vertical convergence it is ¼ degree of prism. When the images no longer merge, the preceding number of prisms is taken as the result of the test."

Elschnig has established the normal range of convergence as 50 degrees of prism. The symptoms of eyestrain are multiple. In many persons amblyopia, visual field contractions or migraine may be some of the symptoms, and these are relieved by treatment of the asthenovergence. The test and treatment advised are the use of a battery of prisms increasing by diopters for horizontal deviations and by 0.25 diopter for the vertical. Many sittings are often necessary to increase convergence to a degree at which symptoms of eyestrain are relieved. The results obtained in 100 cases of eyestrain are noted. Increase of convergence from 7 to 10 degrees up to 70 or 80 degrees is not unusual. An adequate number of typical cases are discussed in detail. The value of the method and the author's enthusiastic results may be gaged when others have had the opportunity to try the procedure. The physiologic cure of such conditions as amblyopia, migraine and contracted visual fields must be regarded with a degree of question. Nineteen references in the literature are given, and an adequate index closes the volume.

Income and Expense Record of Doctor..... for the year ..... from ..... 193... to ..... 193.... With Forms for Daily Record of Cash Receipts and Earnings. Cloth. Price, $3. Pp. 52. Michigan City, Indiana: Hill Publishing Company, 1932.

This comprises printed forms on which to keep the monthly accounts of cash payments. There is a sufficient number of these forms, it is assumed, to last for one year; there are also other forms for monthly accounts of cash receipts and earnings, with space for summarizing the miscellaneous receipts of the month, and the amount of cash services and the amount received on account. Accompanying the bound set of forms are pads of unbound and simpler printed forms on which to record daily cash receipts and earnings and at the same time show whether any new business was cash or charge and whether it was a miscellaneous item. These forms were prepared especially for physicians who do not desire a more complicated system of bookkeeping. It enables the physician to determine from day to day and from month to month the net result of his practice and other interests. There are instructions about how to make the entries. The requirements of the federal income tax laws have been kept in mind, so that the preparation of the income tax return will be made simpler.

Diathermy Including Diathermotherapy and Other Forms of Medical and Surgical Electrothermic Treatment. By Elkin P. Cumberbatch, M.A., B.M., D.M.R.E., Medical Officer in Charge of Electrical Department and Lecturer on Medical Electricity, St. Bartholomew's Hospital, London. With nine collaborators. Third edition. Cloth. Price, $6. Pp. 576, with 170 illustrations. Baltimore: William Wood & Company, 1937.

Since the publication of the second edition of Cumberbatch's Diathermy in 1928, considerable advance has been made in the medical and surgical uses of high frequency currents and there has been added the newer form of electrothermic treatment recognized in the United States under the name of short wave diathermy. To cover this progress Cumberbatch has added 244 pages to his volume and has enlisted the aid of nine collaborators.

There are three main parts of the volume, the first including history and the physical and electrotechnical principles, the second medical electrothermic methods and the third surgical electrothermic methods. In the first part a chapter on physical principles by the physicist H. J. Taylor contains besides much pertinent information about the newer forms of high frequency currents also a multitude of formulas and equations of possible interest only to physicists. In the second part chapters of special contributors deal with diathermy in gynecology and in chronic arthritis, in diseases of the cardiovascular system, in treatment of dementia paralytica and in ophthalmology. There is a critical and fairly exhaustive chapter on the physical and clinical aspects of short wave diathermy under the admittedly inexact heading of short wave treatment. According to Cumberbatch's comparative studies, "in disease that is not deeply situated there appears to be little difference between the results of diathermic treatment and that obtained by short waves, although the technic practiced renders the latter more comfortable for the patient and much easier for the practitioner." A special chapter is devoted to the subject of inductothermy. In the third part of the volume, comprising almost 200 pages, there are chapters by collaborators on electrosection and on electrosurgery in malignant disease of the upper air passages, for the destruction of the tonsils, for prostatic obstruction and in ophthalmology, and chapters by the author covering the other fields.

The volume is well illustrated, is written in a fluent style and contains many references to American clinicians and methods. It is a valuable contribution of a leading English authority and is of practical interest to both beginners and experts in the field of medical electricity.

Hilfsbuch für raum- und aussenklimatische Messungen mit besonderer Berücksichtigung des Katathermometers. Von Franz Bradtke und Walther Liese. Paper. Price, 7.50 marks. Pp. 100, with 50 illustrations. Berlin: Julius Springer, 1937.

This volume is designed as an aid to the practicing hygienist and to heating and ventilating engineers, in addition to the answers given to medicometeorological and bioclimatic questions. In addition to the main considerations of heat, of various kinds and degrees, as related to the comfort of the individual while indoors, some consideration is given to outside climatic conditions. The main value of the book lies in two directions: First, a clear though brief outline of the biophysical influences affecting bodily comfort. Such factors as temperature sensation, production of heat, chemical and physical heat regulation, heat losses, influence of moving air, moist air, radiant heat, pigmentation, ionized air, and dust in air are considered. Second, and most comprehensive, is the discussion of the various factors in relation to the means for attaining practical measurements. One section is devoted to such matters as wet and dry thermometers, psychrometry, equivalent temperature, effective temperature, resultant temperature and radiant heat, with a concomitant discussion of such instruments as the psychrometer, the prottmeter, the eupatheoscope, the globe thermometer, the homotherm and the weather "frigorimeter." The differences in meaning between the various terms is aptly illustrated by the elucidation of the uses of the various instruments. Special emphasis is laid on the working and use of the katathermometer. The discussion on this subject is valuable to any one interested in measurements by means of the katathermometer. The theoretical aspects of the instrument are carefully considered, though the practical use of this section would be of more interest to one interested in the physical sciences. However, the actual measurements and methods of use in various situations are covered in detail, so that a variety of interest is engaged. Another good point is the listing of the minimal equipment needed for determining room and outside air conditions. The voluminous detail should again be noted, as such information is not usually given clearly enough to be of value to those just entering into this field. In its entirety, this book should prove to be a valuable aid to those who have any interest in the subject of air conditioning and the effects of surrounding influences on the human body.

The Physician's Business: Practical and Economic Aspects of Medicine. By George D. Wolf, M.D., Attending Otolaryngologist, Sydenham Hospital, New York City. Foreword by Harold Rypins, A.B., M.D., F.A.C.P. Cloth. Price, $5. Pp. 384, with 57 illustrations. Philadelphia, New York, Montreal & London: J. B. Lippincott Company, 1938.

The author discusses many of the practical business matters of medical practice which are important especially to young physicians. Obviously the physician gives first consideration to the care of his patients; often he finds little time remaining to keep the business side of the practice in good order. The author aims to counsel and to place at the disposal of physicians much practical information of this kind. He advises concerning the selection of a location, and the equipment of an office. He discusses such ethical questions as obligations to patients, relations to his colleagues and to consultants, and hospital and dispensary affiliations. He reproduces actual reports of consultants to family physicians concerning examinations that have been made of patients. He points out the advantage to physicians of becoming affiliated with their county medical society

and the American Medical Association. He gives advice about the preparation of medical papers, public addresses and radio talks. The chapter on "The Doctor and His Patient" includes a discussion of medical fees and of the daily records that a physician should keep. In this chapter is a section entitled "Instructions to Patients." The author believes one should give written, rather than oral, instructions to patients whenever practicable. Among these typewritten instructions are some entitled "Care of the Baby," "Anticonstipation Diet," "Obesity Diet" and "Scabies," under which he has seven points instructing the patient how to get rid of this malady. Other typewritten instructions to patients include setting-up exercises illustrated by simple drawings, massage, how to prepare a turpentine stupe, flaxseed poultice and mustard baths. There are instructions on how to irrigate the nose, throat, ear and eye, how to give proctoclysis and hypodermic injections, how to set up trays for various operations, what to include in a blood transfusion set and an obstetric case and what equipment is necessary to perform a hemorrhoidectomy and a circumcision. There is a chapter on forensic medicine and another on the income tax, showing how to keep records which make easier the preparation of the income tax return. There is a brief chapter on the current trends in medical practice and a discussion of economic evils of the present day. The book contains much information that will help especially young physicians.

Beiträge zur Entwicklung der Strukturen und Kreuzungen im Zentralnervensystem. Von Professor Dr. Döllken. Boards. Price, 5.80 marks. Pp. 68, with 51 illustrations. Leipzig: Georg Thieme, 1937.

The author discusses briefly the various decussations and commissures of the central nervous system from the standpoint of embryologic development, physiology and anatomic structure. The eye and the optic nerve are considered, as by Cajal and others, to be the primary factor which is the basis of other decussations and commissures of the central nervous system. Commissures are present not only as gross elements of fiber tract structure but also in the histologic elements as networks, commissures and decussations within individual nerve cells and also of individual nerve fibers. The phylogenic relationship between primitive nerve network in lower animals with the network in parts of the higher vertebrates is discussed briefly. The latter half of the monograph is devoted largely to the embryologic development of the nuclei and tracts of the cranial nerves. The monograph is well illustrated and has a full biography, which, however, is not so extensive as to include too many minutiae.

Practical Neuroanatomy: A Textbook and Guide for the Study of the Form and Structure of the Nervous System. Adapted to the Needs of the Student and Practicing Physician. By J. H. Globus, B.S., M.D., Associate Professor of Neuroanatomy, New York University. Cloth. Price, $6. Pp. 387, with 148 illustrations. Baltimore: William Wood & Company, 1937.

After years of teaching his subject to medical students, the author, a well known neuropathologist and neuro-anatomist, has incorporated his material in this book. He explains clearly and adequately the difficult subject in its broad outlines and the book has many beautiful illustrations. The anatomic explanations are unusually clear and understandable. In a separate section, details of neuropathologic staining technics are briefly described. At the end of the book outlines for student drawings are printed on perforated pages so that they can be detached. These are especially useful for medical students. The work is highly recommended for its purpose in teaching students neuro-anatomy.

Skin Diseases in General Practice: Their Recognition and Treatment. By H. Haldin-Davis, D.M., M.A., F.R.C.P., Consulting Dermatologist to the Royal Free Hospital, London. Third edition. Cloth. Price, $6.25. Pp. 400, with 97 illustrations. New York & London: Oxford University Press, 1937.

This concise and practical treatise makes no pretense at being a complete textbook of dermatology, and within the limits set by its author it fulfils its purpose. The arrangement of the diseases of the skin according to their topographic distribution follows the plan of Sabouraud's Dermatologie topographique and is of value for ready reference. There is of course some unavoidable overlapping in the consideration of those diseases which may appear anywhere on the body. Due emphasis is given the recent therapeutic advances, particularly the use of gold compounds in erythematous lupus and the modern methods of applying radium in cutaneous cancer. X-ray dosage is still expressed in "pastille" doses. There may be a valid objection to such statements as "In the treatment of acne vulgaris a dose should be given a little short of a pastille dose." Most American dermatologists advise smaller doses at weekly intervals. The illustrations are numerous and well selected and those in colors are particularly good. The format of the book is excellent and the practitioner will find the diagnostic and therapeutic side of the subject adequately covered in spite of the omission of histopathology and of the rarer skin diseases.

Modern Treatment in General Practice, Volume III. Edited by Cecil P. G. Wakeley, D.Sc., F.R.C.S., F.R.S.E., Senior Surgeon, King's College Hospital, London. Cloth. Price, $4. Pp. 436, with 70 illustrations. Baltimore: William Wood & Company, 1937.

This is the third volume, entitled "Modern Treatment in General Practice," which has been assembled by the editorial staff of the *Medical Press and Circular* from articles published in that periodical by well known men in the British Isles. There are fifty-one articles in this volume and there seems to be no special connection between them except that all emphasize diagnosis and treatment. The first one, by Gordon-Taylor, is entitled "The Surgical Treatment of Cancer of the Stomach." The fortieth article, for example, is by James Maxwell, entitled "Treatment of Asthma," and the last article is by Leonard Williams, entitled "Dietetic Essentials in General Practice." Those interested will find in the front of the volume a list of the articles and the authors of both volume I and volume II.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Compensation of Physicians: Value of Services not Dependent on Saving Patient's Life.—A physician operated on Charles Smith at the University of California Hospital, in San Francisco. The patient died and the physician assigned his claim for fees to one Baird, who brought suit against Smith's widow in the municipal court of San Francisco. That court granted a motion by the widow to transfer the cause to her home county, Butte. At the trial there the plaintiff moved that the cause be retransferred to San Francisco for the convenience of witnesses. Affidavits were presented tending to show that a trial in San Francisco would accommodate fifteen named witnesses, all of whom were physicians, or employees of the hospital previously referred to, and none of whom could attend a trial in Butte County without great loss and inconvenience to themselves and to the hospital. The affidavits further stated that all witnesses were familiar with the facts and would testify as to the value of the services performed. The defendant filed two counter affidavits based on information and belief. One affidavit alleged that it would be necessary to call as witnesses on behalf of the defendant four physicians of Butte County who would testify that the patient's ailment was necessarily fatal, that the performance of the operation in question was useless and that therefore the services rendered were not worth the sum demanded. The other affidavit merely alleged that each and every witness mentioned in the plaintiff's affidavits was not a necessary or proper witness and would not be qualified to testify as to the value of the services. The superior court of Butte County denied the plaintiff's motion for retransfer to San Francisco and the plaintiff appealed to the district court of appeal, third district, California.

The trial court abused its discretion in denying the application, said the appellate court. The convenience of witnesses and the interest of justice required a change of venue to San Francisco. Furthermore, the affidavits presented by the defendant failed to indicate any competent evidence of material facts to be testified to by any physician in Butte County who would be convenienced by retaining the trial in that county. One affidavit

merely named four physicians who would testify as to the character and value of the services. The fact that these physicians would testify that the operation was useless and ineffectual to save the life of the patient was not material to the issue of the case. Ordinarily the value of a physician's service is not dependent on saving the life of a patient. The skill of the greatest surgeons in the world is sometimes futile. The court also believed that the counter affidavits of the defendant were worthless or of little value because they were based on information and belief and stated mere conclusions without stating facts on which the conclusions were based.

For the reasons stated the district court of appeal directed the superior court of Butte County to grant the motion for change of venue to San Francisco.—*Baird v. Smith (Calif.), 68 P. (2d) 979.*

Workmen's Compensation Acts: Physician Not Authorized to Treat Compensation Cases May Not Collect Fee.—The workmen's compensation law of New York was amended in 1935 so as to provide that medical care under the act may be rendered only by physicians authorized so to do by the state industrial commissioner. The plaintiff, a licensed physician, at the request of the defendant, an employer, rendered medical care to a workman injured in the course of his employment. Subsequently he sued the employer for the value of his services but failed to allege that he was authorized by the industrial commissioner to render medical care. The trial court for that reason dismissed his suit. The supreme court of New York, appellate division, affirmed the dismissal (*Szold* v. *Outlet Embroidery Supply Co., Inc.,* 248 App. Div. 865, 291 N. Y. S. 395; abstracted, THE JOURNAL, May 15, 1937, p. 1743), and he appealed to the Court of Appeals of New York.

It was not unreasonable, said the court, for the state to declare a man to be a competent physician by licensing him to practice medicine and then to impose the additional requirement of a special authorization if the patient happens to be a workman suffering from accidental injuries, arising out of and in the course of his employment. The presumption is that the legislature inquired and found the need of special training or fitness for the treatment of compensable industrial injury and occupational disease. The act in providing that no physician may be authorized by the commissioner to treat workmen's compensation cases unless recommended by a medical society or by a board composed of physicians did not deny the plaintiff due process of law nor unlawfully delegate legislative power to nongovernmental agencies. The provisions in the act designed to control the amounts to be awarded for medical services, said the court, constituted a legitimate exercise of the police power of the state. The medical care which the employer must furnish is part of the statutory compensation of the workman. It may well have been conceived that the minimum fee requirement would effectively put a stop to unwholesome competition for opportunity to treat employees and that it would also attract the more skilful and experienced physicians into the field. Power exists, said the court, to assure full delivery of workmen's compensation to be awarded in money. The power to say that compensation in the form of medical care shall be adequate in quality is not essentially different.

To the contention that the 1935 amendments were unconstitutional in that they made voluntary medical societies new departments of the state government and that compulsory arbitration of the value of medical services contravened the constitutional right of jury trial, the court referred to the following provisions of the state constitution authorizing the enactment of a workmen's compensation act: "Nothing contained in this Constitution shall be construed to limit the power of the Legislature to enact laws for the protection of the lives, health, or safety of employees; or for the payment . . . by employers . . . either directly or through a State or other system of insurance or otherwise, of compensation for injuries to employees; . . . or for the adjustment, determination and settlement, with or without trial by jury, of issues which may arise under such legislation."

The judgment of the lower court against the plaintiff was affirmed.—*Szold v. Outlet Embroidery Supply Co., Inc. (N. Y.), 8 N. E. (2d) 858.*

Society Proceedings

COMING MEETINGS

Alabama, Medical Association of the State of, Mobile, Apr. 19-21. Dr. D. L. Cannon, 519 Dexter Ave., Montgomery, Secretary.
American Association for the Study of Neoplastic Diseases, Atlanta, Ga., Apr. 14-16. Dr. Eugene R. Whitmore, 2139 Wyoming Ave. N.W., Washington, D. C., Secretary.
American Association of Anatomists, Pittsburgh, Apr. 14-16. Dr. George W. Corner, 260 Crittenden Blvd., Rochester, N. Y., Secretary.
American Association of Genito-Urinary Surgeons, Atlantic City, N. J., May 2-4. Dr. Henry L. Sanford, 1621 Euclid Ave., Cleveland, Secretary.
American Association of Pathologists and Bacteriologists, Atlantic City, N. J., May 3-4. Dr. Howard T. Karsner, 2085 Adelbert Road, Cleveland, Secretary.
American Association of the History of Medicine, Atlantic City, N. J., May 2. Dr. E. J. G. Beardsley, 1919 Spruce St., Philadelphia, Secretary.
American Association on Mental Deficiency, Richmond, Va., Apr. 20-23. Dr. E. Arthur Whitney, Washington Road, Elwyn, Pa., Secretary.
American Bronchoscopic Society, Atlantic City, N. J., Apr. 30. Dr. Lyman Richards, 319 Longwood Ave., Boston, Secretary.
American Gastro-Enterological Association, Atlantic City, N. J., May 2-3. Dr. Russell S. Boles, 1901 Walnut St., Philadelphia, Secretary.
American Gynecological Society, Asheville, N. C., May 30-June 1. Dr. Richard W. TeLinde, 11 East Chase St., Baltimore, Secretary.
American Laryngological Association, Atlantic City, N. J., May 2-4. Dr. James A. Babbitt, 1912 Spruce St., Philadelphia, Secretary.
American Laryngological, Rhinological and Otological Society, Atlantic City, N. J., Apr. 27-29. Dr. C. Stewart Nash, 277 Alexander St., Rochester, N. Y., Secretary.
American Neurological Association, Atlantic City, N. J., May 2-6. Dr. Henry A. Riley, 117 East 72d St., New York, Secretary.
American Orthopedic Association, Atlantic City, N. J., May 3-5. Dr. Ralph K. Ghormley, 110 Second Ave. S.W., Rochester, Minn., Secretary.
American Society for Clinical Investigation, Atlantic City, N. J., May 2. Dr. J. M. Hayman Jr., 2065 Adelbert Road, Cleveland, Secretary.
American Surgical Association, Atlantic City, N. J., May 2-4. Dr. Charles G. Mixter, 319 Longwood Ave., Boston, Secretary.
Arizona State Medical Association, Tucson, Apr. 21-23. Dr. D. F. Harbridge, 15 East Monroe St., Phoenix, Secretary.
Arkansas Medical Society, Texarkana, Apr. 18-20. Dr. W. R. Brooksher, 602 Garrison Ave., Ft. Smith, Secretary.
Association of American Physicians, Atlantic City, N. J., May 3-5. Dr. Hugh J. Morgan, Vanderbilt University Hospital, Nashville, Tenn., Secretary.
California Medical Association, Pasadena, May 9-12. Dr. F. C. Warnshuis, 450 Sutter Street, San Francisco, Secretary.
Conference of State and Provincial Health Authorities of North America, Washington, D. C., Apr. 9-11. Dr. A. J. Chesley, Minnesota State Office Bldg., St. Paul, Secretary.
Congress of American Physicians and Surgeons, Atlantic City, N. J., May 3-4. Dr. John T. King Jr., 1210 Eutaw Place, Baltimore, Secretary.
Connecticut State Medical Society, Groton, June 1-2. Dr. Creighton Barker, 258 Church St., New Haven, Secretary.
District of Columbia, Medical Society of the, Washington, May 4-5. Dr. C. B. Conklin, 1718 M St. N.W., Washington, Secretary.
Florida Medical Association, Miami, May 9-11. Dr. Shaler Richardson, 111 W. Adams St., Jacksonville, Secretary.
Georgia, Medical Association of, Augusta, Apr. 26-29. Dr. Edgar D. Shanks, 478 Peachtree St. N.E., Atlanta, Secretary.
Hawaii Territorial Medical Association, Honolulu, May 20-22. Dr. Douglas B. Bell, Dillingham Bldg., Honolulu, Secretary.
Illinois State Medical Society, Springfield, May 17-19. Dr. Harold M. Camp, Lahl Bldg., Monmouth, Secretary.
Iowa State Medical Society, Des Moines, May 11-13. Dr. Robert L. Parker, 3510 Sixth Ave., Des Moines, Secretary.
Kansas Medical Society, Wichita, May 9-12. Mr. C. G. Munns, 112 West Sixth St., Topeka, Executive Secretary.
Louisiana State Medical Society, New Orleans, May 2-4. Dr. P. T. Talbot, 1430 Tulane Ave., New Orleans, Secretary.
Maryland, Medical and Chirurgical Faculty of, Baltimore, Apr. 26-27. Dr. Walter Dent Wise, 1211 Cathedral St., Baltimore, Secretary.
Massachusetts Medical Society, Boston, May 31-June 2. Dr. Alexander S. Begg, 8 The Fenway, Boston, Secretary.
Mississippi State Medical Association, Jackson, Apr. 19-21. Dr. T. M. Dye, McWilliams Bldg., Clarksdale, Secretary.
Missouri State Medical Association, Jefferson City, May 2-4. Dr. E. J. Goodwin, 634 N. Grand Blvd., St. Louis, Secretary.
Nebraska State Medical Association, Lincoln, Apr. 26-28. Dr. R. B. Adams, Center-McKinley Bldg., Lincoln, Secretary.
New Hampshire Medical Society, Manchester, May 17-18. Dr. Carleton R. Metcalf, 5 South State St., Concord, Secretary.
New Jersey, Medical Society of, Atlantic City, May 17-19. Dr. Alfred Stahl, 55 Lincoln Park, Newark, Secretary.
New York, Medical Society of the State of, New York, May 9-12. Dr. Peter Irving, 2 East 103d St., New York, Secretary.
North Carolina, Medical Society of the State of, Pinehurst, May 2-4. Dr. T. W. M. Long, Roanoke Rapids, Secretary.
Northern Tri-State Medical Association, Findlay, Ohio, Apr. 12. Dr. Robert H. Elrod, 1920 Jefferson Ave., Toledo, Ohio, Secretary.
Ohio State Medical Association, Columbus, May 11-12. Mr. C. S. Nelson, 79 East State St., Columbus, Executive Secretary.
Oklahoma State Medical Association, Muskogee, May 9-11. Dr. L. S. Willour, Third and Seminole, McAlester, Secretary.
Philippine Islands Medical Association, Zamboanga City, Apr. 27-29. Dr. A. S. Fernando, 817 Taft Ave., Manila, Secretary.
Rhode Island Medical Society, Providence, June 1-2. Dr. Guy W. Wells, 124 Waterman St., Providence, Secretary.
Society for the Study of Asthma and Allied Conditions, Atlantic City, N. J., Apr. 30. Dr. W. C. Spain, 116 East 53d St., New York, Secretary.
South Carolina Medical Association, Myrtle Beach, May 17-19. Dr. E. A. Hines, Seneca, Secretary.
South Dakota State Medical Association, Huron, May 9-11. Dr. Clarence E. Sherwood, 102½ Egan Ave. S., Madison, Secretary.
Tennessee State Medical Association, Nashville, Apr. 12-14. Dr. H. H. Shoulders, 706 Church St., Nashville, Secretary.
Texas, State Medical Association of, Galveston, May 9-12. Dr. Holman Taylor, 1404 West El Paso St., Fort Worth, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers in continental United States and Canada for a period of three days. Periodicals are available from 1927 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Diseases of Children, Chicago

55: 231-454 (Feb.) 1938

Relation of Endocrine Disturbances to Certain Heredodegenerative Symptoms. J. Warkany and A. G. Mitchell, Cincinnati.—p. 231.
*Cardiac Complications of Acute Hemorrhagic Nephritis. M. I. Rubin and M. Rapoport, Philadelphia.—p. 244.
*Cryptorchidism Treated with Gonadotropic Principle. J. A. Bigler, Highland Park, Ill.; L. M. Hardy, Chicago, and H. V. Scott, Fort Wayne, Ind.—p. 273.
Mental Growth of Epileptic Children. I. N. Kugelmass, Louise E. Poull and J. Rudnick, New York.—p. 295.
Influence of Lethargic Encephalitis on Intelligence of Children as Determined by Objective Tests. A. W. Brown, R. L. Jenkins and Lillian E. Cisler, Chicago.—p. 304.
Studies of Fetal Respiratory Movements: II. Recording Methods. B. E. Bonar and C. Fenning, Salt Lake City.—p. 322.
Pathologic Background of Cerebral Diplegia. B. J. Alpers and E. Marcovitz, Philadelphia.—p. 356.
Stuttering: Problem and Suggested Treatment. I. W. Karlin and L. Kennedy, Brooklyn.—p. 383.

Cardiac Complications of Hemorrhagic Nephritis.—Rubin and Rapoport investigated the status of the heart of fifty-five patients with acute hemorrhagic nephritis. Fourteen children (two deaths from acute cardiac failure) with varying degrees of cardiac involvement during the acute stage of their illness have been encountered. Further analysis of these fifty-five patients revealed rather unexpectedly that cardiac involvement was the most frequent accompanying complication of acute hemorrhagic nephritis. The clinical evidences of cardiac involvement and failure observed in the cases were: (1) dyspnea, tachypnea and cough, (2) cardiac enlargement, demonstrable both by physical examination and in teleroentgenograms, (3) muffled heart tones, (4) rapid heart rate, (5) murmurs, usually a mitral systolic murmur, (6) gallop rhythm, (7) enlargement and tenderness of the liver, (8) engorgement of the venous system, (9) pulmonary edema, (10) peripheral edema and (11) electrocardiographic changes indicative of varying degrees of myocardial damage. During the acute phase of the disease two factors are operative which may affect the heart adversely: myocardial damage and increased peripheral vascular resistance (hypertension). With regard to myocardial damage, it is possible that the same infective agent responsible for the acute nephritis damages the heart. Hypertension (which is evidence of increased peripheral resistance brought about by vasospasm) is the agent immediately responsible for the impairment of cardiac function. Hypertension has been present in all the patients with acute hemorrhagic nephritis exhibiting signs of cardiac insufficiency. In those cases in which the heart is primarily involved by the disease it is likely to fail under the added load of a sudden increase in peripheral resistance. Whether or not cardiac failure results is dependent on the extent of the myocardial damage and the degree of hypertension. The only deaths in the entire group of fifty-five nephritic patients were due to cardiac failure. The authors administered magnesium sulfate by intramuscular injection, using a dose of 0.2 cc. of a 50 per cent solution per kilogram of body weight. The effects of a single dose are usually prompt. Fluids should be restricted in cases of acute hemorrhagic nephritis with hypertension, for there is danger of producing a further elevation of blood pressure and precipitating a cardiac catastrophe. Supportive measures for the heart were instituted in addition to the use of magnesium sulfate and the limitation of fluid intake. After administration of a complete digitalizing dose it was usually found unnecessary to continue with a maintenance dose. In cases in which there was cardiac involvement of any degree, sedation (morphine) was valuable. The ultimate prognosis as regards the heart itself is good, as only one of the twelve surviving patients who had cardiac involvement shows residual cardiac damage.

Cryptorchidism Treated with Gonadotropic Principle.—From a study of seventy-one boys with ninety-one undescended testicles who were given injections of the gonadotropic principle of the urine of pregnant women and the gonadotropic principle of the anterior lobe of the pituitary gland, Bigler and his co-workers find that these extracts produce changes in the external genitalia of some patients but not in all. The changes when present are manifested by flushing of the genitalia, enlargement of the testicles and penis or descent of the testicles. In the patients treated with the gonadotropic principle of the urine of pregnant women 48 per cent of the undescended testicles completely descended into the scrotum by the end of treatment but only 45 per cent remained descended. If the partially descended testicles are included, 61 per cent can be considered benefited. In the patients treated with the gonadotropic principle of the anterior lobe of the pituitary gland 25 per cent of the testicles completely descended into the scrotum but only 18 per cent remained descended. Including those in whom the testicles partially descended, 35 per cent were benefited. When both gonadotropic extracts were used in treating the patient, 40 per cent of the cryptorchid testicles showed complete descent but only 25 per cent of the testicles remained in the scrotum; 55 per cent were benefited. When descent of the testicle occurs, it usually begins to take place before 4,000 rat units of the gonadotropic principle has been administered. Treatment seems to be about equally successful at any age after the first year, but it seems better not to begin treatment until after the seventh year of life. In a control series of fourteen untreated and inadequately treated patients (seventeen undescended testicles) descent of the testicles did not occur. Both extracts often caused enlargement of small testicles but never permanent enlargement of normal testicles. Both extracts produced enlargement of a normal-sized penis in eight boys. Reactions both general and local may occur during treatment. Treatment had no effect on weight or height or on body build, even when hypoplasia of the genitalia was present, with a feminine type of body build. If improvement does not occur by the time about 4,000 rat units of the gonadotropic factor of the urine of pregnant women has been administered, operation may be considered.

American Journal of Medical Sciences, Philadelphia

195: 141-280 (Feb.) 1938

Culture of Human Marrow: Improved Apparatus for Large Scale Culture. E. E. Osgood, Portland, Ore.—p. 141.
Studies of Gaucher Cells by Supravital Technic. L. A. Erf, New York.—p. 144.
Observations on Seventy-Eight Cases of Pernicious Anemia, with Especial Reference to Weight Changes. E. Jones, Nashville, Tenn.—p. 150.
Rubber Sheaths as Venereal Disease Prophylactics: Relation of Quality and Technic to Their Effectiveness. R. Cautley, G. W. Beebe and R. L. Dickinson, New York.—p. 155.
Clinical Experience with Sulfanilamide in Treatment of Beta Hemolytic Streptococcus Infections. P. O. Hageman and F. G. Blake, New Haven, Conn.—p. 163.
Experience with Sulfanilamide in Meningitis. Josephine B. Neal and E. Appelbaum, New York.—p. 175.
*Histopathologic Study of Tissues of Sixty-Five Patients Injected with Thorium Dioxide Sol for Hepatosplenography: Follow-Up Study of Ten Old Cases. W. M. Yater and E. R. Whitmore, Washington, D. C.—p. 198.
*Evaluation of Congo Red Test for Amyloidosis: Correlation of Autopsy Findings and Dye Absorption in 125 Cases. S. Lipstein, Staten Island, N. Y.—p. 205.
Blood Pressure and Pulse Rate as an Index of Emotional Stability. H. G. Armstrong, Dayton, Ohio.—p. 211.
Gastric Acidity After Gastro-Enterostomy. C. Holman and W. R. Sandusky, New York.—p. 220.
Effect of Zinc Content on Action of Insulins. S. S. Altshuler and R. Leiser, Eloise, Mich.—p. 234.
Occult Cardiovascular Syphilis. U. J. Wile and J. S. Snow, Ann Arbor, Mich.—p. 240.
Cardiovascular Complications of Hyperthyroidism. A. C. Ernstene, Cleveland.—p. 248.

Tissues After Injection of Colloidal Thorium Dioxide.—Yater and Whitmore performed necropsies on sixty-four patients at intervals of a few days to three years after the injection of an average dose of 75 cc. of colloidal thorium dioxide for the purpose of making hepatosplenograms. In no case was there any evidence of injury to the tissues or cellular

reaction that could be ascribed to the presence of the thorium dioxide. A subcutaneous nodule was excised from the arm of a patient four years and five months after the injection of colloidal thorium dioxide accidentally into the subcutaneous tissues. The thorium dioxide was walled off by dense hyaline connective tissue; the nodule resembled the kind of nodule found in the lungs in nodular silicosis. Nowhere was there any evidence of injury to the tissues or cellular reaction other than the primary reaction resulting in the walling off of the thorium dioxide.

Congo Red Test for Amyloidosis.—In evaluating the congo red test in the diagnosis of amyloidosis, Lipstein made an analysis of 125 necropsies on tuberculous subjects in whom a congo red test had been performed. Amyloidosis was diagnosed in the usual manner; that is, the use of iodine grossly and congo red or methyl violet staining for microscopic sections. In all these cases tuberculosis with its attendant complications was the predominant picture and the patients ranged in age from 2 to 72 years. At necropsy, amyloidosis was present in thirty-four. In twenty-nine of these cases the percentage of absorption was 90 per cent or higher, with complete absorption of the dye in twenty-four. There were five cases recorded in the amyloid group with less than 90 per cent of absorption of the dye. Postmortem examination in four of these cases revealed minimal or moderate amyloid changes and the spleen was the only parenchymatous organ involved grossly. A possible explanation for the low absorption values in these instances is that there were not sufficient amyloid deposits to absorb the dye. In the ninety-one cases in which no amyloidosis was present the percentage of congo red absorption in eighty-seven of the cases varied from 10 to 75. In the remaining four cases there were percentage values of 100, 95, 90 and 80, despite the absence of evidence of amyloid at necropsy. The study confirms the observation that, although amyloid changes are infrequent postmortem observations even in large general hospitals, the incidence rises sharply in tuberculosis institutions. In the present series amyloidosis was present in 27.2 per cent of the cases. In a statistical survey of approximately 1,000 necropsies at the hospital, the incidence was found to be 20 per cent.

American Journal of Psychiatry, New York

94: 759-1012 (Jan.) 1938

Clinical Studies of Drug Addiction: III. Critical Review of Withdrawal Treatments with Method of Evaluating Abstinence Syndromes. L. Kolb and C. K. Himmelsbach, Lexington, Ky.—p. 759.
Circumscribed Cortical Atrophy in Presenile Psychoses: Pick's Disease: Clinicopathologic Study. C. Davison, New York.—p. 801.
Emotional Factors in Rehabilitation of the Physically Disabled. L. Reznikoff, Secaucus, N. J.—p. 819.
Interpretation of Electrical Activity of the Brain. H. Davis, Boston.—p. 825.
Electrical Signs of Cortical Function in Epilepsy and Allied Disorders. H. H. Jasper and I. C. Nichols, Providence, R. I.—p. 835.
Protracted Hypoglycemia: Case. N. L. Easton, New Toronto, Ont.—p. 853.
Mental Disease in Russia. J. Page, Rochester, N. Y.—p. 859.
Hospital Records. W. C. Garvin, Binghamton, N. Y.—p. 867.
Misunderstanding of Pathogenesis of Schizophrenia, Arising from the Concept of "Splitting." M. Levin, Mayview, Pa.—p. 877.
*Vitamin C Studies in Alcoholics. H. Wortis, S. B. Wortis and Frances I. Marsh, New York.—p. 891.
Analysis of Spoken Language of Patients with Affective Disorders. S. Newman and Vera G. Mather, New Haven, Conn.—p. 913.
Review of Work on Extrasensory Perception. D. L. Wolfle, Chicago.—p. 943.
Comments on Dr. Wolfle's Review. J. B. Rhine, Durham, N. C.—p. 957.
Neuroses and Neuropsychoses: Illustrative Case Histories. A. Myerson, Boston.—p. 961.

Vitamin C in Alcoholism.—The Wortises and Marsh determined the reduced cevitamic acid content in the blood and spinal fluid in normal persons and in 103 chronic alcoholic patients. In two patients the five hour urinary excretion test (Wright) was done. The studies indicate that in chronic alcoholism without peripheral neuritis or psychosis there is a tendency for a low normal vitamin C content of the blood and spinal fluid, whereas alcoholic patients with peripheral neuritis or the various forms of alcoholic psychosis tend to have a subnormal vitamin C content of the blood and spinal fluid. The results seem to emphasize the nutritional factor in the production of nervous and mental changes in chronic alcohol addicts. It is suggested that vitamin C may have a role in the metabolism of the nervous tissue.

American Journal of Tropical Medicine, Baltimore

18: 1-110 (Jan.) 1938

Development of International Transportation and Its Effect on Practice of Tropical Medicine. H. C. Clark, Panama, Republic of Panama.—p. 1.
Importance of Environment in Study of Tropical Diseases. W. A. Sawyer, New York.—p. 9.
History of Leprosy in the United States. G. W. McCoy, Washington, D. C.—p. 19.
*Incidence of Poliocidal Serums in Regions Where Poliomyelitis Epidemics Are Infrequent. N. P. Hudson, Columbus, Ohio, and E. H. Lennette, Chicago.—p. 35.
Life History of Diphyllobothrium Mansonoides Mueller, 1935, and Some Considerations with Regard to Sparganosis in the United States. J. F. Mueller, Syracuse, N. Y.—p. 41.
Present State of Knowledge Concerning Existence of Species of Nyctotherus (Ciliata) Living in Man. R. Wichterman, Woods Hole, Mass.—p. 67.
Propagation of Yellow Fever Virus in Mouse Testicle. H. H. Smith, New York.—p. 77.
Comparative Pathology of Infections of Plasmodium Rouxi in Canaries with Other Malarias of Birds, Monkeys and Man. M. D. Young, Baltimore.—p. 85.
Two Years' Observation of Malaria Therapy in Texas. S. W. Bohls and D. H. Lawrence, Austin, Texas.—p. 101.

Incidence of Poliocidal Serums.—Hudson and Lennette present data on the incidence of poliomyelitis in various parts of the world, as determined by the presence in human serum of antibodies capable of neutralizing the specific virus. These studies were originally undertaken in the attempt to find regions in which this disease does not exist and in which possibly this type of antibody was not to be found. Those areas were selected in which epidemics of poliomyelitis occur at least infrequently: tropical to subtemperate zones. Poliomyelitis does not occur frequently in epidemic proportions in the tropics, although instances are on record. The survey increases the conception of the world-wide distribution of this disease, both because of the incidence of neutralizing serum and because of reports of sporadic cases in regions not otherwise heard from. The existence of these sporadic cases emphasizes the infrequency of poliomyelitis epidemics and, since the authors have examined chiefly tropical regions, their data lend support to the idea that the tropical conditions contribute some factor to the host-parasite relationship that allows for a common existence of the virus, generalized immunization, occasional sporadic cases and infrequent epidemics. Most of the tests were done by a qualitative method, the MV strain of virus being mixed with undiluted serum. Under the conditions of experimentation the poliocidal antibodies were apparently the same in the different serums, and the incidence of positive specimens was similar in the areas examined. As the same virus was neutralized by the various serums in the authors' experiments and with the interpretation that the so-called neutralization test is a specific antigen-antibody reaction, the data presented indicate that the virus in the widely scattered regions sampled is antigenically identical. Seven of nine adults of Thursday Island, Australia, and ten of twelve adults of Formosa, Brazil, possessed the neutralizing property. In the former place sporadic cases of poliomyelitis occur, and deaths from the disease have been reported from scattered parts of Brazil.

American Review of Tuberculosis, New York

37: 125-258 (Feb.) 1938

Present Trend of Case Fatality Rates in Tuberculosis. G. J. Drolet, New York.—p. 125.
*Selective Thoracoplasty with Lung Mobilization: Conservative Goal in Permanent Collapse Therapy. R. H. Overholt, Boston.—p. 152.
Roentgenologic Group Examinations for Pulmonary Tuberculosis. R. G. Bloch, B. F. Francis, C. W. Eisele and E. W. Mason, Chicago.—p. 174.
Weltmann Serum Coagulation Reaction: Comparison with Sedimentation Reaction and with Clinical Findings in Pulmonary Tuberculosis. S. A. Levinson and R. I. Klein, Chicago.—p. 200.
Intracutaneous Reactions Against Antiserum in Tuberculosis. H. J. Corper and C. B. Vidal, Denver.—p. 238.
Experimental Oleothorax. D. H. Saley, H. S. Willis and Lucia Ellwart, Northville, Mich.—p. 245.

Thoracoplasty with Lung Mobilization.—Overholt discusses the results of the 763 thoracoplasties performed on 370 patients during the five years that the department of thoracic surgery has been established in the Lahey Clinic. During the first half of this period selective thoracoplasty was used and during the latter half thoracoplasty with lung mobilization.

The group represents a consecutive series of patients operated on by the same surgical team. The number of seriously ill patients accepted for thoracoplasty has been increased, yet the risk of operation has steadily declined. Of those in the poor risk group, sixty had bilateral cavitation. Of the 206 patients in the "good chronic" group, 89.5 per cent were definitely benefited by the procedure, 51 per cent are already back at work and 25 per cent are in various sanatoriums with their disease quiescent or arrested. In the poor risk group 24 per cent are working and the condition of 26 per cent is quiescent or arrested. It was found that 69 per cent were benefited by operation. In the entire series 121 patients were completely rehabilitated. The possibilities are good that eventually the condition of 248 (80 per cent) of the 307 patients whose treatment has been completed will be classified as apparently arrested and that they will be able to carry out varying degrees of activity. The results suggest that thoracoplasty is the most valuable of all permanent collapse procedures. Selective yet adequate collapse of the diseased lung and conservation of the uninvolved lung should be the ideal in permanent collapse therapy. The extent of the decostalization can be reduced by mobilization of the upper lobe at the time of the first-stage operation. A delay between stages is an important factor in planning the most conservative operation.

Annals of Surgery, Philadelphia

107: 161-320 (Feb.) 1938

Acute Intestinal Obstruction: Evaluation of Results in 2,150 Cases, with Detailed Studies of Twenty-Five Showing Potassium as a Toxic Factor. J. Scudder, R. L. Zwemer and A. O. Whipple, New York.—p. 161.
*Short-Interval Stage Operations for Severe Hyperthyroidism. A. B. McGraw, Detroit.—p. 198.
Factors Influencing Prognosis in Carcinoma of the Breast. H. H. Davis, Omaha.—p. 207.
Intratracheal Suction in Management of Postoperative Pulmonary Complications. C. Haight, Ann Arbor, Mich.—p. 218.
Spontaneous Choledochogastrostomy and Cholecystogastrostomy. M. Davison and L. J. Aries, Chicago.—p. 229.
Stones in the Common Bile Duct. F. C. Beall, Fort Worth, Texas.—p. 238.
Appendicitis in Army Service: Report of 2,100 Cases. R. W. Bliss, El Paso, Texas, and L. D. Heaton, Fort Warren, Wyo.—p. 242.
Volvulus of Cecum and Ascending Colon. M. Weinstein, Long Island City, N. Y.—p. 248.
Argentaffine Tumors of the Gastro-Intestinal Tract: Report of Three Cases; One with Distant Metastases. T. E. Wyatt, Nashville, Tenn.—p. 260.
Mechanism of Spastic Vascular Disease and Its Treatment. P. Heinbecker and G. H. Bishop, St. Louis.—p. 270.
Neoplasms of Abdominal Wall, with Especial Reference to Malignant "Implantation" Tumors. J. A. Lazarus, New York.—p. 278.
*Blood Loss in Neurosurgical Operations. J. C. White, G. P. Whitelaw, W. H. Sweet and E. S. Hurwitt, Boston.—p. 287.
Giant Cell Tumor of Cervical Spine. D. P. Willard and J. T. Nicholson, Philadelphia.—p. 298.
Rationale of Bone Drilling in Delayed and Ununited Fractures. P. V. Prewitt and E. R. Easton, New York.—p. 303.

Short-Interval Operations for Severe Hyperthyroidism.—After trial and observation of intervals varying from one day to two weeks, McGraw is convinced that the optimal period for "short-interval" stage thyroidectomies in severely toxic goiter patients is from seven to ten days between operations. A single period of hospitalization of a month or less by shortening the interval between operations to a week or ten days is often necessary in certain goiter patients owing to their financial or educational status. If the patient's condition permits, unilateral lobectomy is the first stage operation of choice. At the first stage the entire isthmus and pyramidal lobe, if present, should also be removed—even at the expense of dealing first with the smaller of two diffusely hyperplastic lobes. At the conclusion of the first stage it is preferable to omit subcutaneous suture of the skin flaps, to use cutaneous clips rather than through and through sutures, and to avoid draining the wound. Before proceeding with the second operation, one should allow the slightest imperfection in wound healing to clear up completely. The wound should be reopened gently and slowly so that as little subcutaneous bleeding as possible will be caused and that any area in the wound suggestive of infection may be detected before the wound is widely opened. At the end of the second operation the wound should again be reclosed without subcutaneous skin sutures and again preferably with clips. The final scars of these two stage operations have been surprisingly excellent. The matter of drainage after the second operation must be left to the surgeon's judgment in the individual case. No drains should be left in place more than twenty-four hours.

Blood Loss in Neurosurgical Operations.—White and his colleagues estimated the volumes of blood lost during operation by three different surgeons and found that in simple craniotomies, when nothing more than an exploration and cerebral biopsy was carried out, the average loss amounted to between 500 and 900 cc. In patients with relatively avascular tumors the loss of blood rose to between 600 and 1,200 cc. In three patients with large meningiomas the hemorrhage exceeded 2,000 cc. In five laminectomies the loss of blood varied from 334 to 1,263 cc. A hemorrhage of more than a liter may seem excessive, but with an epidural abscess or a vascular tumor, or in a hypertensive patient, both the muscles and the bony lamina may bleed profusely. In a patient with a hemangioma and compression of the spinal cord, the attempt to expose the tumor had to be given up after two trials owing to severe hemorrhage. On the other hand, in two patients on whom cervicothoracic ganglionectomy and section of the fifth cranial nerve root were carried out, bleeding amounted to only 107 and 86 cc. Excessive bleeding which occurs in the usual neurosurgical operation is due to certain regional conditions. A wide infiltration of the scalp with a 1 per cent procaine-epinephrine solution diminishes bleeding. The authors' preference is to supplement this with basal tribrom-ethanol in amylene hydrate, as this drug produces a moderate fall in blood pressure and thereby diminishes hemorrhage from the cerebral vessels. Basal narcosis contributes to the comfort of the patient and reduces nervousness and restlessness. Administration of the general anesthetics ether and nitrous oxide should be avoided whenever possible because they increase bleeding. Nitrous oxide-oxygen anesthesia also produces increased bleeding because it so frequently causes partial asphyxia. When a general anesthetic must be used, a preliminary infiltration of the scalp with 0.5 per cent procaine-epinephrine solution is of value not only as a hemostatic agent but also because a lighter level of anesthesia can be employed. When it is estimated that a hemorrhage of a liter or more has occurred, a transfusion is given before the patient is sent to the ward. After hemorrhages exceeding 1,200 to 1,500 cc., or whenever the blood pressure remains at a critically low level, multiple transfusions are given. This can be carried out in the ward if the intravenous infusion has been kept running. The total fluid intake on the day of operation should rarely exceed 2,000 cc. and should be given slowly over a period of from five to eight hours.

Archives of Surgery, Chicago

36: 171-372 (Feb.) 1938

Histologic Effects of Various Sclerosing Solutions Used in the Injection Treatment of Hernia. L. Manoil, New York.—p. 171.
Peritonitis. J. S. Horsley, Richmond, Va.—p. 190.
*Comedo Carcinoma of the Breast. D. Lewis and C. F. Geschickter, Baltimore.—p. 225.
Cerebral Pneumography: Ventriculographic Interpretation of Tumors In and About Third Ventricle, Aqueduct of Sylvius and Fourth Ventricle. O. R. Hyndman, Iowa City.—p. 245.
*Etiologic Factors of Mesenteric Lymphadenitis. J. Ireland, Chicago.—p. 292.
Teratoma of Pineal Body: Classification of Embryonal Tumors of Pineal Body: Report of Case of Teratoma of Pineal Body Presenting Formed Teeth. S. J. Bochner and J. E. Scarff, New York.—p. 303.
Metastasizing Hemangioma Simulating an Aneurysm. G. E. Ward and A. F. Jonas Jr., Baltimore.—p. 330.
A Review of Urologic Surgery. A. J. Scholl, Los Angeles; F. Hinman, San Francisco; A. von Lichtenberg, Budapest, Hungary; A. B. Hepler, Seattle; R. Gutierrez, New York; G. J. Thompson, J. T. Priestley, Rochester, Minn.; E. Wildbolz, Berne, Switzerland, and V. J. O'Conor, Chicago.—p. 336.

Comedo Carcinoma of the Breast.—Lewis and Geschickter state that comedo carcinoma usually presents two rather characteristic pictures: diffuse and localized. Diffuse comedo carcinomas present some of the clinical features peculiar to intracanalicular myxoma. It is a slowly growing tumor which involves the greater part of the affected breast, and an isolated tumor cannot be palpated in the enlargement. Despite the size of the growth there are frequently no palpable lymph nodes. Small elevations in the skin may be found, which are caused by

the protrusion of the epithelial plugs within the ducts, and not infrequently a discharge from the nipple is noted. In the localized form the tumor is small, measuring from 1 to 3 cm. in diameter. It is usually situated at the margin of the areola just beneath the skin and is freely movable. The axillary nodes, as a rule, are not involved, and not infrequently a yellowish or watery discharge from the nipple is noted. The affected breast is slightly larger than the uninvolved breast. The tumor differs from the intracystic papilloma and the blue dome cyst in that it is relatively harder and more irregular. The age incidence of comedo carcinoma corresponds to the age incidence of other forms of carcinoma of the breast. The location of the comedo carcinoma suggests an origin in the larger ducts. Retraction or fixation of the nipple occurs often, and occasionally the patient complains of burning and itching of the nipple, a symptom more common in Paget's disease. The tumor is usually located near the skin, and atrophy of the overlying fat and dimpling of the skin occur. The tumor remains movable. Even when the growth is larger than a large grapefruit and involves almost the entire breast, there will be no fixation to the wall of the chest. Several tumors may be found in the same breast. Of all the forms of carcinoma of the breast, comedo carcinoma offers the most favorable prognosis. There were 85 per cent of five year cures. The majority of the patients living more than five years after complete operation have remained well for ten years or more.

Etiology of Mesenteric Lymphadenitis.—Ireland's report is based on a series of twenty-two patients in whom mesenteric lymphadenitis was found at operation. Appendectomy was performed on all but two. Twenty-one of the twenty-two patients recovered, and one died of streptococcic peritonitis due to the rupture of a suppurative gland. Infections and toxins have probably been advocated as etiologic factors more than any other agents. That an actual infection of the glands themselves occurs in some patients is definitely proved. Attempts to find organisms in the glands removed at operation have usually been unsuccessful, indicating that a toxin may possibly be the underlying factor in many cases. However, it has been definitely excluded in some patients in whom organisms have been found. Conceptions of the port of entrance of the causative agent into the glands have differed. The appendixes of nineteen of the patients in the present series were examined microscopically, and only eight showed any evidence of pathologic change. The appendix is a part of the large intestine and it is a well known fact that the mesenteric lymph glands are frequently not enlarged in cases of acute or of chronic appendicitis. It may be possible that a kinking, twisting or obliteration of the lumen of the appendix may be a factor in some cases. However, an anatomic condition of this character was found in the appendix in only two cases in the present series and consisted of a kinking of the organ. Of the twenty-two patients in the present series, twenty were traced and reexamined. These final examinations were made from sixty days to four years and 285 days after appendectomy. Sixteen of them had had no kind of abdominal distress simulating another attack of mesenteric lymphadenitis since operation, but four were found to have attacks much like those present before operation. The weight of evidence seems to be against those who believe that an infection from the appendix can be excluded as a causative factor in mesenteric lymphadenitis. The percentage of recoveries after appendectomy seems too high to be a mere coincidence. Brennemann suggested that bacteria may be transmitted from the throat by the blood stream or may be swallowed and produce localized inflammatory lesions in the intestine with secondary involvement of the lymph glands. Of the twenty-two patients, there were fifteen (68 per cent) who presented evidence of infection of the upper respiratory tract at the time of operation or just preceding it. It is reasonable to suppose that a higher percentage would have been found if such evidence had been carefully looked for in every instance. Distention, catarrhal inflammation, trauma, intestinal stasis, incompetence of the ileocecal valve with autoinfection of the ileum, regional ileitis, abrasions of the mucous membrane and lowered resistance of the surface epithelium of the intestine have been thought to be important in the production of mesenteric lymphadenitis. Allergy seemed certainly to be the causative factor in one patient of the present series who had attacks of abdominal pain after appendectomy similar to those before operation. Epinephrine hydrochloride given hypodermically during the paroxysms of pain gave relief. Eggs, pineapples and blueberries were removed from the diet, and the attacks ceased immediately and had not recurred at the last examination, eleven months after these offending foods were eliminated. Careful studies were made of the two other patients who had attacks after appendectomy, but the cause was not found. Therefore it seems clear that there is no one etiologic factor that is responsible for the condition.

Arkansas Medical Society Journal, Fort Smith

34: 183-202 (Feb.) 1938

Peritonitis: Its Recognition and Treatment. C. G. Heyd.—p. 183.
Craniocerebral Injuries: Management of Acute Case. H. Wilkins, Oklahoma City.—p. 188.
Selecting Case for Cesarean Section. F. Richardson, Fayetteville.—p. 191.
History Taking in General Practice. S. W. Douglas, Eudora.—p. 192.

California and Western Medicine, San Francisco

48: 73-152 (Feb.) 1938

The Criminal Insane. R. A. Cushman, Talmage.—p. 83.
Coccidioides Immitis Intradermal Skin Reaction: Preliminary Report of 449 Cases. S. Hurwitz, J. E. Young and Bernice U. Eddie, San Francisco.—p. 87.
Phases of Adolescent Development in Girls. Helen B. Pryor, Stanford University, and H. D. Carter, Berkeley.—p. 89.
Roentgen Therapy: Some of Its Complications. R. T. Taylor, Los Angeles.—p. 94.
Los Angeles County Hospital Collection Bureau. G. H. Kress, Los Angeles.—p. 97.

Canadian Medical Association Journal, Montreal

38: 107-208 (Feb.) 1938

Carcinoma of Rectum and Rectosigmoid: Report of Eighty-Nine Cases, with Especial Reference to Electrocoagulation in Selected Cases. P. H. T. Thorlakson and A. W. S. Hay, Winnipeg, Manit.—p. 107.
*Sudden Death in Infancy. A. Goldbloom and F. W. Wiglesworth, Montreal.—p. 119.
Internal Frontal Hyperostosis Syndrome: Report of Two Cases. A. A. Roger, Toronto.—p. 129.
Tertiary Syphilis of the Breast. H. G. Ross, Montreal.—p. 132.
Puerperal Sepsis. B. P. Watson, New York.—p. 135.
Acute Intestinal Obstruction: Appendical. E. H. Wood, Ottawa, Ont.—p. 142.
Clinical Aspects of Precordial Pain. W. F. Connell, Kingston, Ont.—p. 147.
Gastro-Intestinal Hemorrhage. H. A. Cave, London, Ont.—p. 151.
Anesthetic Procedures as Standardized for Certain Types of Operation in the Large General Hospital. H. J. Shields, Toronto.—p. 155.
Urticaria. H. Orr, Edmonton, Alta.—p. 159.
Pathologic Study of Carcinoma of Cervix. P. J. Kearns, Montreal.—p. 163.
Treatment of Pulmonary Tuberculosis After Forty. J. Prévost, Montreal.—p. 166.
Renal and Ureteral Anomalies. W. L. Ritchie, Montreal.—p. 170.
Staphylococcus Toxoid for Recurrent Styes. A. E. MacDonald, Toronto.—p. 172.

Sudden Death in Infancy.—Nineteen of thirty cases of sudden death in infancy showed definite inflammatory lesions at necropsy, indicating, Goldbloom and Wiglesworth believe, a fulminating bacterial infection. Four infants were asphyxiated from a mechanical cause (three from the aspiration of milk and one from a large hemangioma of the trachea). One child, in addition to a healing pneumonia, had a most remarkable localized hypertrophy of the islands of Langerhans. Five of the remaining six patients showed indefinite inflammatory lesions, but taking into consideration the clinical and pathologic changes, which were all similar, it is possible that they also died of a fulminating infection. The cases were characterized by a vague preceding history, sudden death and at necropsy by interstitial pneumonia, petechial hemorrhages in the lungs, thymus and pericardium and sometimes by a septic type of spleen. The sixth patient probably died of laryngeal spasm associated with tetany. The thymuses, with two exceptions, were not sufficiently enlarged to be abnormal. One of these children died from the aspiration of milk, while the other showed evidence of a generalized infection. The weight of the thymus in the group of patients who died suddenly was the same as in those who died in twenty-four hours from the onset

of definite clinical signs of infection. None of the classic features of the status lymphaticus syndrome were present. Sudden death has frequently occurred when the thymus was small. It is suggested that many cases of sudden death, although not all, are caused by fulminating infections possibly associated with immature immunity on the part of the infant. Postmortem examinations in cases of sudden death should be thorough before the easy diagnosis of status thymicolymphaticus is yielded to. When no pathologic lesion can be found, the pathologist must look to the biochemist or endocrinologist for help.

Connecticut State Medical Society Journal, Hartford

2: 57-108 (Feb.) 1938

Value of Roentgenologic Study in Diagnosis of Heart Disease. G. Levene, Boston.—p. 57.
Clinical Diagnosis of Early Syphilis. J. E. Moore, Baltimore.—p. 70.
Relation of Nasal Surgery to Allergy. J. D. Kelly, New York.—p. 76.

Endocrinology, Los Angeles

22: 155-290 (Feb.) 1938

*Study of Mechanism of Edema Associated with Menstruation. G. W. Thorn, Katherine R. Nelson and Doris W. Thorn, Baltimore.—p. 155.
Experimental Development of Mammary Gland of Monkey. W. U. Gardner and G. Van Wagenen, New Haven, Conn.—p. 164.
Quantitative Cytologic Studies of Anterior Lobe of Hypophysis of Fetuses and Children, Correlated with Sexual and Skeletal Development. S. R. Halpern, Denver.—p. 173.
Comparative Efficacy of Various Androgens as Determined by Rat Assay Method. C. D. Kochakian, Rochester, N. Y.—p. 181.
Interrelation of Pituitary and Adrenal in Control of Carbohydrate Levels in the Rat. L. L. Bennett, Berkeley, Calif.—p. 193.
Male Sex-Stimulating and Female Sex-Repressing Fraction from Adrenal Gland. F. M. Pottenger Jr. and D. G. Simonsen, Monrovia, Calif.—p. 197.
Orally Active Sex-Maturation Fraction from Adrenal Gland. F. M. Pottenger Jr. and D. G. Simonsen, Monrovia, Calif.—p. 203.
Effect of Cortin on Excretion of Electrolytes. F. A. Hartman, Lena A. Lewis and C. Gwendoline Toby, Columbus, Ohio.—p. 207.
Mineral Metabolism of Adrenalectomized Rats Studied by Appetite Method. C. P. Richter and J. F. Eckert, Baltimore.—p. 214.
Calcium and Phosphorus Studies: XIV. Effect of Repeated Doses of Parathyroid Extract on Chemical Composition of Blood and Urine of Dog: Explanation of Cause of Death in Parathyroid Overdosage. D. H. Shelling, L. Kajdi and Lenore Guth, Baltimore.—p. 225.

Edema of Menstruation.—Thorn and his associates observed the fluctuation in the body weight of fifty normal women over a period of thirty-five days. This period represented one complete menstrual cycle. The ages of the subjects, nurses and dietitians, varied between 19 and 36 years. The subjects were weighed each morning immediately prior to breakfast. No attempt was made to control either the total fluid or food intake. In general, the food provided for all members of the group was similar. The onset and duration of menstruation were noted, as well as the occurrence of any unusual signs and symptoms such as headache, swelling of the abdomen, hands and feet, increased appetite and thirst. During the period of observation, the mean daily atmospheric temperature varied between 76.9 and 56.8 F. The relative humidity, measured at noon, varied between 82 and 19 per cent. Twenty-four of the subjects were observed to gain 1 Kg. (2⅕ pounds) or more during the premenstrual period. In addition, nine subjects gained weight during the premenstrual period but a subsequent loss occurred prior to the onset of menstruation. In many of the subjects the onset of menstruation was characterized by a rapid loss of weight. During the intermenstrual period thirty-eight subjects were observed to have a marked fluctuation (temporary gain) in weight (1 Kg. or more) at or about the time of ovulation. Since the increase in body weight was noted from eight to fifteen days preceding menstruation, it is probable that ovulation occurred in many during the period of increase in weight. The increase and subsequent loss of weight that occurred during the intermenstrual period were not always followed by an increase in weight during the premenstrual period. Approximately two thirds of the subjects who gained weight during the premenstrual period noted swelling of the abdomen and increased appetite and thirst. The subjects in whom no significant increase in weight occurred also experienced the same signs and symptoms. Headache was frequently observed to occur immediately preceding or during menstruation. The increased intake of food and water as a result of an increased appetite and thirst contributed materially to the total gain in body weight observed in some subjects during the premenstrual period. Balance studies demonstrated a retention of sodium, chloride and water during the intermenstrual as well as the premenstrual phase of the cycle. The onset of menstruation was associated with an increased renal excretion of sodium, chloride and water. The increase in the secretion of sex hormones and the increase in appetite and thirst appear to be contributing factors in the gain in body weight that occurs during the menstrual cycle.

Journal of Comparative Neurology, Philadelphia

68: 173-296 (Feb.) 1938

Relative Influence of Locus and Mass of Destruction on Control of Handedness by Cerebral Cortex. G. M. Peterson and L. C. Fracarol, Albuquerque, N. M.—p. 173.
Localization in Oculomotor Nuclei of Goldfish. Z. Hadidian and M. S. Dunn.—p. 191.
Development of Cerebrum of Amblystoma During Early Swimming Stages. C. J. Herrick, Chicago.—p. 203.
Spinal Accessory Nerve in Human Embryos. A. A. Pearson, Chicago.—p. 243.
Fiber and Cellular Degeneration Following Temporal Lobectomy in the Monkey. R. W. Rundles and J. W. Papez, Ithaca, N. Y.—p. 267.

Journal of Experimental Medicine, New York

67: 169-344 (Feb.) 1938

Anaphylaxis in the Isolated Heart. H. B. Wilcox Jr. and E. C. Andrus, Baltimore.—p. 169.
Quantitative Studies on Antibody Purification: II. Dissociation of Antibody from Pneumococcus Specific Precipitates and Specifically Agglutinated Pneumococci. M. Heidelberger and E. A. Kabat, New York.—p. 181.
Influence of Host Factors on Neuroinvasiveness of Vesicular Stomatitis Virus: III. Effect of Age and Pathway of Infection on Character and Localization of Lesions in Central Nervous System. A. B. Savin and P. K. Olitsky, New York.—p. 201.
Id.: IV. Variations in Neuroinvasiveness in Different Species. A. B. Sabin and P. K. Olitsky, New York.—p. 229.
Serum Sodium, Potassium and Chloride After Suprarenalectomy in Cats with Diabetes Insipidus. C. A. Winter, E. G. Gross and W. R. Ingram, Iowa City.—p. 251.
*Iron Metabolism in Experimental Anemia: "Availability of Iron." P. F. Hahn and G. H. Whipple, Rochester, N. Y.—p. 259.
Hemolytic Effect of Indol in Dogs Fed Normal Diets. C. P. Rhoads and W. H. Barker, New York.—p. 267.
Induced Susceptibility of Blood to Indol. C. P. Rhoads and D. K. Miller, New York.—p. 273.
Increased Susceptibility to Hemolysis by Indol in Dogs Fed Deficient Diets. C. P. Rhoads, W. H. Barker and D. K. Miller, New York.—p. 299.
Results of Intratracheal Injection of Bordet-Gengou Bacillus in Monkey and Rabbit. D. H. Sprunt, D. S. Martin and Sara McDearman, Durham, N. C.—p. 309.
Canine Distemper in Rhesus Monkey (Macaca Mulatta). G. Dalldorf, Margaret Douglass and H. E. Robinson, Valhalla, N. Y.—p. 323.
Sparing Effect of Canine Distemper on Poliomyelitis in Macaca Mulatta. G. Dalldorf, Margaret Douglass and H. E. Robinson, Valhalla, N. Y.—p. 333.

Iron Metabolism in Experimental Anemia.—Elvehjem and Hart and their associates claim that the dipyridyl reagent reacts only with the iron which is not bound in complex form (nonhematin iron) and that, since hematin iron is not available for hemoglobin production, the amount of iron in the food which can be utilized by the body is measured by this method. Hahn and Whipple offer evidence that such a premise is untenable. In experimental anemia in dogs due to blood loss the term "available iron" as determined by the dipyridyl test has no physiologic significance. Iron salts (100 per cent available by dipyridyl) given in optimal dose (560 mg. in two weeks) will cause a net production of from 50 to 55 Gm. of hemoglobin above the control base line in anemic dogs. This means that an iron salt which is rated as 100 per cent available by the dipyridyl test is only 35 per cent physiologically available. The term "available iron (dipyridyl)" simmers down to iron not in the form of hematin compounds. The absorption of this "available iron" is conditioned by a great variety of factors, many unknown at this time. Liver contains "available iron (dipyridyl)" but also organic factors influencing hemoglobin regeneration in anemia, as liver ash contains only about 50 per cent the potency of the whole liver. Fractions of heart, liver, spleen and kidney may contain but little iron yet cause much regeneration of hemoglobin in anemic dogs.

Journal Industrial Hygiene & Toxicology, Baltimore

20: 1-96 (Jan.) 1938

Emphysema as Factor in Dyspnea of Pneumoconiotic Coal Miners. S. L. Cummins, Cardiff, Wales.—p. 1.

Further Studies on Relation of Pneumoconiosis to Respiratory Diseases in the Pittsburgh District. Lucy Schnurer, Pittsburgh.—p. 14.

Investigation of Characteristics of Bausch & Lomb Dust Counter. S. W. Gurney, C. R. Williams and R. R. Meigs, Boston.—p. 24.

Hazards in Radium and Mesothorium Refining Plant at the University of Missouri. J. P. Morris, Columbia, Mo.—p. 36.

*Experimental Production of Bladder Tumors in Dogs by Administration of Beta-Naphthylamine. W. C. Hueper, F. H. Wiley and H. D. Wolfe, with assistance of K. E. Ranta, M. F. Leming and F. R. Blood, Wilmington, Del.—p. 46.

Experimental Investigation on Etiology of Aniline Tumors. W. C. Hueper, F. A. Briggs and H. D. Wolfe, Wilmington, Del.—p. 85.

Effect of Beta-Naphthylamine on Tissue Respiration. F. H. Wiley, Wilmington, Del.—p. 92.

Bladder Tumors from Beta-Naphthylamine.—Hueper and his associates cite investigations that were undertaken in order to provide (through the experimental production of "aniline tumors" in animals) a sound foundation for the study of the various aspects of occupational neoplasms and to obtain information on any possible systemic effect of prolonged exposure to one of the suspected carcinogenic aromatic amines (beta-naphthylamine). Preneoplastic and neoplastic formations (papillomas, carcinomas) were obtained in thirteen of sixteen female dogs treated for a period of from twenty to twenty-six months with subcutaneous injections and oral feeding of commercial beta-naphthylamine. Periodic cystoscopic examinations combined with biopsies indicated that the pretumorous changes of the mucosa of the bladder are represented by blanched or red-brown elevated areas and small polypous, edematous protrusions. The neoplasms observed were pedunculated and sessile, benign and malignant papillomatous new growths and nodular, infiltrative carcinomas. Tumor multiplicity reaching, in several instances, the stage of generalized papillomatosis was a frequent phenomenon. The predominant localization of the tumors in the dependent parts of the bladder and the microscopic observations support strongly the urogenous origin of "aniline" tumors. Prolonged administration of relatively large doses of beta-naphthylamine produces blood destruction, degenerative changes in the tubular epithelium of the kidneys and in the parenchyma of the liver, which also contains adenomatoid, ill defined foci of regenerated liver cells. No detectable change was observed during the investigations in the p_H of the blood or in its content of glutathione, dextrose, calcium, cholesterol and phospholipid phosphorus.

Journal-Lancet, Minneapolis

58: 43-112 (Feb.) 1938

Coronary Disease Simulating Insulin Reactions: Report of Case. J. L. Calene, Aberdeen, S. D.—p. 44.

Retroperitoneal Syndrome: Report of Case. D. L. Kegaries, Rapid City, S. D.—p. 46.

Bright's Disease. C. F. Morsman, Hot Springs, S. D.—p. 49.

Treatment of Pernicious Anemia. L. H. Fredricks, Bismarck, N. D.—p. 54.

Malaria Developing in North Dakota: Case. R. B. Radl, Bismarck, N. D.—p. 59.

Bronchial Asthma. A. R. Foss, Missoula, Mont.—p. 60.

The Management of Pernicious Anemia: In Private Practice. F. R. Schemm, Great Falls, Mont.—p. 63.

Side Lights on Early Montana Medical History. H. W. Gregg, Butte, Mont.—p. 69.

*Bone Marrow Studies. E. L. Tuohy, Duluth, Minn.—p. 74.

Some Diseases of Peripheral Arteries. E. V. Allen, Rochester, Minn.—p. 80.

Gastroscopy in Diagnosis of Gastric Disease. H. J. Moersch, Rochester, Minn.—p. 87.

Infectious Mononucleosis. C. E. Lyght, Northfield, Minn.—p. 91.

The Scope of Student Health Practice. R. W. Bradshaw, Oberlin, Ohio.—p. 96.

Research as an Essential Function of Student Health Service. E. L. Shrader, St. Louis.—p. 98.

Bone Marrow Studies.—The study of the bone marrow is recommended by Tuohy not as a routine but as an adjunct method, especially in acute hematologic perversions. The statement often made that for the premortem diagnosis of "aleukemic leukemia" bone marrow smears are necessary must be reserved for those instances in which the circulating blood smear fails at any time to show qualitative leukocytic reversion. So far the author has not found such a case. The interpretation of the leukopenias calls for the closest differential studies. Without expecting the direct study of the bone marrow to be entirely determinative, he regards its future as promising.

Journal of Nervous and Mental Disease, New York

87: 133-264 (Feb.) 1938

Significance of Convulsive Reaction During Insulin and Cardiazol Therapy of Schizophrenia. L. von Meduna, Budapest, Hungary.—p. 133.

Significance of Epileptic Convulsion as Therapeutic Factor in Pharmacologic Shock Therapy of Schizophrenia. M. Sakel, Vienna, Austria.—p. 140.

Incidence of Pilonidal Sinuses in Mental Defectives. W. J. Johnson and Anne G. Levingston, Wrentham, Mass.—p. 156.

Psychoanalytic Remarks on Alice in Wonderland and Lewis Carroll. P. Schilder, New York.—p. 159.

Mnemistic Biology and Psychology. E. Bleuler, Zurich, Switzerland.—p. 169.

Relationship of Segmental Nuclei of Brain Stem. W. F. Allen, Portland, Oregon.—p. 202.

Journal of Pharmacology & Exper. Therap., Baltimore

62: 1-126 (Jan.) 1938

Effect of Digitalis on Anesthetized Dog: I. Action on Splanchnic Bed. L. N. Katz, S. Rodbard, M. Friend and W. Rottersman, Chicago.—p. 1.

Some Undescribed Pharmacologic Properties of Bulbocapnine. H. Molitor, Rahway, N. J.—p. 16.

Influence of Theophylline on Absorption of Mercupurin and Salyrgan from Site of Intramuscular Injection. A. C. DeGraff, R. C. Batterman and R. A. Lehman, New York.—p. 26.

Arterenol as Possible Sympathetic Hormone. Z. M. Bacq, Liége, Belgium.—p. 37.

Fate of Drugs Used in Spinal Anesthesia. K. Bullock and A. D. MacDonald, Manchester, England.—p. 39.

Gastro-Intestinal Administration of Sobisminol: Absorption, Distribution and Excretion of Bismuth. P. J. Hanzlik, A. J. Lehman, A. P. Richardson and W. Van Winkle Jr., San Francisco.—p. 54.

*Local Anesthetic Actions of Two Esters of Mono Alkylated Amino Alcohols. D. I. Abramson and S. D. Goldberg, Brooklyn.—p. 69.

Studies on Mechanism of Morphine Hyperglycemia: Role of Sympathetic Nervous System, with Especial Reference to Sympathetic Supply to Liver. R. C. Bodo, F. W. Co-Tui and A. E. Benaglia, New York.—p. 88.

Studies of Chronic Morphine Poisoning in Dogs: VII. Effect of Thyroid Feeding on Excretion of Morphine in Tolerant and Nontolerant Dogs. O. H. Plant and D. Slaughter, Iowa City.—p. 106.

Effect of Benzedrine Sulfate on Emptying Time of Human Stomach. E. J. Van Liere and C. K. Sleeth, Morgantown, W. Va.—p. 111.

Influence of Digitalis Glucosides on Force of Contraction of Mammalian Cardiac Muscle. M. Cattell and H. Gold, New York.—p. 116.

Anesthetic Actions of Esters of Mono Alkylated Amino Alcohols.—Abramson and Goldberg determined the toxicity and anesthetic efficiency of monocaine and amylcaine on a number of different test animals. Monocaine was an effective compound in producing infiltration and conduction anesthesia. Although it was about one and one-half times as toxic as procaine, its anesthetic efficiency was many times greater. It produced block of the sciatic nerve in a nonanesthetized guinea pig in concentrations as low as 0.00016 per cent [1/64 per cent]. Amylcaine, although also capable of producing nerve block in low concentrations, appeared to be more efficient in effecting anesthesia when applied topically, as to the cornea of the rabbit's eye. The presence of erosions following the administration of this compound was less frequent than in the case of the other anesthetics.

Kentucky Medical Journal, Bowling Green

36: 39-84 (Feb.) 1938

Management of Eye Injuries. M. C. Baker, Louisville.—p. 43.

Laryngeal Diphtheria and Its Management. D. L. Salmon, Madisonville.—p. 48.

Local and General Considerations of Some Common Eye Diseases. F. W. Pirkey, Louisville.—p. 53.

Care of the Sick Child. L. H. Winans, Lexington.—p. 56.

Diphtheria in a Five Months Old Child. C. B. Gettelfinger, Louisville.—p. 59.

Osteomyelitis of Jaw and Septicemia in a Four Year Old Child. R. Buskirk, Louisville.—p. 60.

Amebic Dysentery in a Child Six Years Old. K. C. Reising, Louisville.—p. 61.

Treatment of the Commoner Fractures of Early Childhood. H. Goldberg, Louisville.—p. 63.

Further Observations on Silicosis. O. O. Miller, Louisville.—p. 65.

Consideration of Breast Tumors. I. Abell Jr., Louisville.—p. 70.

Treatment of Recent Wounds. R. A. Griswold, Louisville.—p. 72.

Recent Developments in Prostatic Surgery. J. M. Townsend and O. Grant, Louisville.—p. 76.

Maine Medical Journal, Portland

29: 23-42 (Feb.) 1938

Osteomyelitis of the Skull. F. T. Hill, Waterville.—p. 23.
Pneumatology (Anesthesia, Resuscitation, Oxygen Therapy). P. J. Flagg, New York.—p. 28.
Chest Conditions Secondary to Empyema of Posterior Paranasal Sinuses. H. Butler, Bangor.—p. 30.

Michigan State Medical Society Journal, Lansing

37: 105-200 (Feb.) 1938

An Outline of Liver Functions and Jaundice. A. C. Ivy, Chicago.—p. 121.
Bronchosinusitis. F. Smith, Grand Rapids.—p. 130.
*Yeast Dermatoses: Contact Dermatitis. O. S. Ormsby, Chicago.—p. 135.
Treatment of Fibroid Tumors and Bleeding of Menopause. J. T. Murphy, Toledo, Ohio.—p. 140.
Cerebral Injury in the Newborn Due to Anoxia at Birth. F. Schreiber and N. Gates, Detroit.—p. 145.
Problems of the Newer Obstetrics. G. Kamperman, Detroit.—p. 151.
Legal Aspects of Psychiatry. L. A. Schwartz, Detroit.—p. 157.
Animal Experimentation. W. T. Dempster, Ann Arbor.—p. 161.

Yeast Dermatoses and Contact Dermatitis.—Ormsby states that a number of cutaneous and mucous membrane disorders formerly described as entities have been found to be due to yeast or yeastlike micro-organisms. Among the cutaneous disorders are erosio interdigitalis, perlèche, waterbed dermatitis, paronychia, onychia and possibly seborrheic dermatitis. A mycotic dermatitis frequently occurs beneath the breasts in fleshy women, in the axillary spaces and in the anogenital region, and occasionally the process becomes generalized. Two or more or all of these disorders may coexist in a given patient. Oral thrush in infants responds well to swabbings with a 1 per cent solution of gentian violet, together with mild alkaline mouth washes. For superficial lesions of the mucous membranes of the mouth and vagina a 3 per cent solution of gentian violet is efficient, applied by swab twice daily. Alkaline mouth washes for the oral cavity and a douche containing a 1:2,000 solution of potassium permanganate for the vagina facilitate recovery. For the deeper lesions on the oral mucosa, surgical excision, x-rays and the internal use of potassium iodide may be necessary. Paronychia responds readily to the local application of a 5 per cent suspension of chrysarobin in chloroform. In the waterbed type, suspension of wet dressings together with the application of a soothing lotion, such as the lime water and zinc oxide lotion, together with a 10 per cent naftalan or 2 per cent ichthammol ointment, soon relieves the condition. In the intertriginous type occurring especially beneath the breasts and in the crotch, painting with a 3 per cent solution of gentian violet is efficient. When much inflammatory reaction is present, a preliminary treatment for several days may consist in soaking the parts twice daily with a hot solution of potassium permanganate in the strength of 1:2,000, dressing the parts in the interim with an ointment containing 10 per cent naftalan. In perlèche, Finnerud found the local application of an 8 per cent solution of silver nitrate efficient. This application may be repeated at intervals of three or four days. Contact dermatitis, presumably produced by external irritants, is among the commonest of cutaneous disorders for which patients seek relief. These cases cover a broad field, beginning with the simple dermatitis venenata group and ending in that large group of cases which may be termed trade or professional dermatitis or eczema. The symptoms in all these cases are sufficiently similar to be classed together. It is important, however, to be able to distinguish between them for the reason that dermatitis venenata is a comparatively simple malady, running its course in a short time and not recurring unless contact with the same irritant is repeated, whereas the other type may continue indefinitely through the development of new sensitizations. The number of substances capable of producing dermatitis by contact is endless. Contact dermatitis furnishes a large number of cases eligible for compensation under the industrial compensation act. The most important task in its treatment is discovery of the irritant and its removal. The treatment of the immediate attack consists of both local and internal applications and agents. An efficient method is the employment in the early stages of a lime water lotion several times during the day, alternated with the application of an oily cream. After two or three days, when the eruption is less acute, the same preparations may be used during the day with an ointment containing naftalan or ichthammol over night. In some instances in which pyogenic infection has developed, a solution of aluminum subacetate or potassium permanganate may be necessary. Immunizing injections are of value in some cases and may be employed both for immunizing and for curative purposes. A method of treatment of all types of contact dermatitis which has been of great value is the use of sodium thiosulfate. This is given by intravenous injections, 0.5 Gm. the first day and 1 Gm. the second, third, fifth and seventh days. This drug has the ability of overcoming hypersensitiveness to a high degree. Cases that formerly extended over a period of several weeks commonly clear up in a week or ten days under its administration.

Minnesota Medicine, St. Paul

21: 79-150 (Feb.) 1938

Radiation Therapy of Tumors with Consideration of Possible Advantages of Supervoltage X-Rays. R. S. Stone, San Francisco.—p. 79.
Energy Metabolism of the Heart in Failure. M. B. Visscher, Minneapolis.—p. 85.
Conservative Renal Surgery. R. G. Scherer, Bozeman, Mont.—p. 91.
*Radium Treatment of Rare Forms of Leukemia. R. E. Fricke and C. H. Watkins, Rochester.—p. 96.
*Tuberculous Infection and Morbidity Among Medical Students and Physicians. F. L. Jennings, Oak Terrace.—p. 102.
Clinical Notes on Results of Fever Therapy: Report of the First International Conference on Fever Therapy, New York City, March 29-31, 1937. F. H. Krusen, Rochester.—p. 105.
Trends in Modern Pediatrics. F. C. Rodda, Minneapolis.—p. 110.
Sinusitis. K. R. Fawcett, Duluth.—p. 112.
Convalescent Serum Treatment in Preparalytic Stage of Poliomyelitis. B. Rosenholtz, St. Paul.—p. 115.

Radium Treatment of Leukemia.—During 1935 and 1936 Fricke and Watkins treated, with radium, sixteen patients with atypical leukemias. Eight patients were diagnosed as having aleukemic phases of chronic myelogenous or lymphatic leukemia. One patient had a monocytic leukemia of the Naegeli type, and seven had types of reticulo-endotheliosis. Once the diagnosis is established in these obscure cases with low leukocyte counts, radium is the treatment of choice in order to obtain satisfactory palliation. Roentgen therapy covers a larger portal and the effect of treatment is usually too sudden and drastic. The authors' best results have been obtained by the very cautious and well controlled use of radium. At a distance of 1 inch (2.5 cm.) from the skin, 50 mg. of radium sulfate (element), filtered through 2 mm. of lead, was applied for a period of eight to twelve hours, depending on the leukocyte count, the size of the spleen and the general condition of the patient. Treatments varied from one to nine areas over the spleen in one treatment series and from eight to twelve hours of treatment per area, all carefully controlled by blood counts. Fifteen of the sixteen patients showed improvement in the condition of their blood and amelioration in their symptoms. The one exception was a man, aged 39, who suffered from an acute reticulo-endotheliosis following a severe attack of acute tonsillitis four weeks previously. Radium treatment was begun but was abandoned after twelve hours, as the patient was failing rapidly. He died two days later. Too little treatment was applied to have affected the disease one way or another.

Tuberculosis Among Medical Students and Physicians.—Jennings points out that fourth year medical students have each spent two weeks as clinical clerks in Glen Lake Sanatorium since 1925. In 1929 they were first questioned with regard to tuberculin tests given them before they entered the sanatorium. Of the first eighty-seven students questioned, 65 per cent had reacted positively when tested at the students' health service at the university to 1:1,000 dilution of old tuberculin. Beginning in the middle of November 1930 the next 184 students were tested on the day of entrance and 66.3 per cent were found to be positive to the intradermal test. The range of positive reactors to tuberculin varies for the years 1930 to 1936 inclusive from 52.5 to 67.8 per cent. The average of 62.04 per cent among the 851 fourth year medical students is less than that reported among fourth year medical students in the eastern part of the country. The number of positive reactors among the medical students of eastern schools increased in each year of the course until in their fourth year 98 per cent of them reacted positively. This steady increase is not necessarily confined to medical schools but is probably true of any

school at which the students' opportunities for infection must increase with continued residence among a large group of people. It is probable that the lower incidence among the University of Minnesota students as compared with that of the eastern schools lies in the fact that Minnesota's students, for the most part, come from communities less densely settled than do the students attending eastern schools. The possibility of tuberculous disease was taken into consideration from the first, and roentgenograms were made of the students' chests the day they started work at the sanatorium. The period here covered extends from 1920 to Sept. 15, 1930. To the 670 in this group who had been here for training at some time during the ten years, questionnaires were sent early in 1932 in an attempt to ascertain the state of their health during the interval between receipt of this questionnaire and their sanatorium residence. Replies were received from 526. The replies disclosed that 267 of the normal group of 473 had considered themselves in good condition and had not troubled to have subsequent roentgenograms of their chests. Of the 206 who had had subsequent roentgenograms, 168 still had normal readings. Thirty others reported evidence of acute or chronic nontuberculous conditions variously diagnosed as bronchitis, bronchiectasis, emphysema and the like, but no evidence of adult tuberculosis. Ten per cent (fifty-three) of the students who came to the sanatorium showed deviations from the normal that might constitute possible evidence of tuberculosis when their chests were first examined. The answers to the questionnaire that was sent to these students from one to ten years after their period of instruction at the sanatorium showed that thirty-nine had had subsequent x-ray examinations. Twenty reported that their lesions had shown no change from the examinations made at the sanatorium. Four have since shown extension of their lesions and two of them have spent some time in a sanatorium as patients. Forty-seven of the fifty-three students in this group had shown no evidence of clinical tuberculosis subsequent to their graduation. There had been no deaths from tuberculosis among the 526 who trained at the sanatorium. Tuberculosis has never caused a proportionately large number of deaths among physicians. Physicians have always been more or less exposed to tuberculosis, but statistics do not show a high death rate among them, which seems to support the assumption that there is a relatively low morbidity rate.

New Jersey Medical Society Journal, Trenton

35: 67-128 (Feb.) 1938

Eight Year Roentgen Survey of Colon Pathology. J. N. Furst and L. J. Gelber, Newark.—p. 75.
Cerebral Palsy and Poliomyelitis as They Concern the Family Doctor, the Orthopedist and the Neurologist. W. M. Phelps, Baltimore.—p. 78.
The Pathology of Intestinal Amebiasis. T. T. Mackie, New York.—p. 86.
Puerperal Infection: Its Prevention and Treatment: Maternal Welfare Article Number Twenty-Three. J. F. Norton, Jersey City.—p. 90.

New York State Journal of Medicine, New York

38: 161-244 (Feb. 1) 1938

Surgical Disease of the Colon. C. G. Heyd, New York.—p. 161.
Roentgen Findings of Renal Tuberculosis. H. K. Taylor and L. P. Wershub, New York.—p. 166.
*Mediastinal Hodgkin's Disease. H. H. Kasabach and K. R. McAlpin, New York.—p. 171.
Electrophoretic Therapy: Problems and Value. K. Harpuder, Bronx.—p. 176.
Treatment of Arthritis in Health Resorts. R. Müller, New York.—p. 181.
Ocular or Pseudotorticollis. M. T. Horwitz, Philadelphia.—p. 184.
Blood Dyscrasias Caused by Occupation, with Specific Reference to Effect of X-Ray, Radium, Lead and Benzol. I. W. Held and A. Lieberson, New York.—p. 186.
Schminke Tumors. M. Berger, New York.—p. 193.
Intra-Abdominal Conditions Due to Trauma. W. T. Doran and W. T. Doran Jr., New York.—p. 196.
Arthritis: Treatment by Physical Therapy. J. Echtman, New York.—p. 201.

Mediastinal Hodgkin's Disease.—Kasabach and McAlpin point out that 251 patients were admitted to the Presbyterian Hospital and Vanderbilt Clinic between 1918 and 1935 with the diagnosis of Hodgkin's disease. Seventy-seven had mediastinal involvement. The cases in which the mediastinum was involved were analyzed in order to determine what relation there might be between treatment and the length of survival. In nineteen of the seventy-seven cases the presenting manifestation of Hodgkin's disease was found in the mediastinum, as shown on roentgenograms, without associated lymphadenopathy elsewhere. In these cases enlargement of peripheral lymph nodes became apparent on an average of eighteen months after the x-ray diagnosis of mediastinal adenopathy. In the remaining fifty-eight patients with mediastinal involvement, Hodgkin's disease was present in various parts of the body at the time of the first examination. Of the seventy-seven patients, twelve have been lost to follow-up and fifty-seven have died. The remaining eight are living and two are at present in the terminal stage of the disease. The average survival period of the group receiving adequate irradiation is five years and four months. Twenty patients had what was considered inadequate treatment. Their average survival period was approximately three years and three months. The remaining seven patients had no treatment. The average survival period in this group was approximately three years and one month. The more generalized the disease, the shorter is the period of survival. Osseous invasion, pulmonary and pleural complications, and enlargement of the liver are associated with shorter period of survival. The maintenance of the patient's weight and general well-being is stressed as an important factor in the prolongation of life.

Northwest Medicine, Seattle

37: 33-60 (Feb.) 1938

Lipocaic: New Pancreas Hormone. L. R. Dragstedt, Chicago.—p. 33.
Response of Insulin-Sensitive and Insulin-Tolerant Patients to Protamine Insulin. B. Holcomb and R. Holcomb, Portland, Ore.—p. 36.
*Sulfanilamide. A. E. Lewis, Seattle.—p. 40.
Aplastic Anemia Due to Sensitivity to Benzol Derivatives. V. W. Miller, Salem, Ore.—p. 43.
Alleviation of Pain in Labor. W. P. Sadler, Minneapolis.—p. 45.
Renal Tuberculosis: Diagnosis and Management. A. H. Peacock, Seattle.—p. 47.
Vincent's Angina and Tartar Emetic. T. W. Ross, Portland, Ore.—p. 49.

Ohio State Medical Journal, Columbus

34: 129-248 (Feb.) 1938

Dependence of Internal Medicine on Neuropsychiatric Ideology. E. C. Fischbein, Dayton.—p. 145.
Modern Problem of Nephritis: Clinical Résumé. P. T. Knies, Columbus.—p. 150.
Molds as Cause of Allergy. L. H. Harris, Elyria.—p. 158.
Alexander-Goldspohn Operation and Its Modification for Retrodisplacement of Uterus. H. M. Wiley, Cincinnati.—p. 161.
*Treatment of Congenital Syphilis with Acetarsone: Preliminary Report. E. E. Smith, R. I. Fried, Cleveland, and M. W. Everhart, Columbus.—p. 165.
Eczematoid Lesions Following Occupational Dermatitis Venenata. I. L. Schonberg and A. Marcus, Cleveland.—p. 169.
Intravenous Use of Morphine Sulfate. M. Salzer, Cincinnati.—p. 170.
Improved Health Standards for Athletics and Physical Education. J. W. Wilce, Columbus.—p. 171.
Gangrenous Diverticulum Associated with Suppurative Appendicitis. S. W. Obenour, Zanesville.—p. 175.
Gonorrheal Conjunctivitis: Treatment with Sulfanilamide and Fever Therapy. C. S. Perry, Columbus.—p. 176.
Treatment of Pneumonia. G. S. Shibley, Cleveland.—p. 177.

Treatment of Congenital Syphilis with Acetarsone.—During the last two years Smith and his co-workers have used acetarsone in the treatment of thirty-three cases of congenital syphilis. There have been few toxic reactions. Whenever a reaction has occurred a rest of one week has been instituted and treatment resumed with a lower dosage. The method of administration has been a modification of the Bratusch-Marrain scale: 5, 10 and 15 mg. daily per kilogram of weight, each for a period of two weeks, then 20 mg. for twelve weeks. Each prescription is made up in 56 cc. of water so that 1 drachm (4 cc.) a day gives the dosage and allows for fourteen doses. At the end of each course a Wassermann test is made and the patient is given a rest period of one month, during which time mercury with chalk is taken. This is given according to the method outlined by Jeans. If the Wassermann reaction is negative, another course is given and the Wassermann test is repeated. If this too is negative a final course is given and then the parent is requested to return with the child every six months for a checkup for the next two years. Of ten patients who began their treatment after they had passed their first birthday, five became serologically negative and five remained positive. However, every child showed clinical improvement. Of the twenty-three children less than 1 year of age nineteen

became serologically negative and four remained positive after one or more courses. Of these four, one died of pneumonia during the second course, one had only one course of therapy, and the remaining two were irregular in attendance at the clinic. Of those who became negative, eight required more than one course before there was a reversal of the Wassermann reaction. There is not a single child in either group that did not improve under treatment.

Oklahoma State Medical Assn. Journal, McAlester

31: 33-66 (Feb.) 1938

Treatment of Urethral Fistula. B. A. Hayes, Oklahoma City.—p. 33.
Low Back Pain in Relation to Urology. S. F. Wildman, Oklahoma City.—p. 35.
Cancer of the Stomach. D. D. Paulus and J. H. Robinson, Oklahoma City.—p. 39.
Diagnosis and Treatment of Maxillary Sinusitis. W. L. Alspach, Tulsa.—p. 43.
Shall We Destroy Medical Protection for Selfish Gain? L. H. Ritzhaupt, Guthrie.—p. 46.

Pennsylvania Medical Journal, Harrisburg

41: 345-454 (Feb.) 1938

Further Experiences with New Principle in Renal Surgery. O. S. Lowsley, New York.—p. 345.
Office Procedure for Treatment of Primary Dysmenorrhea: Clinical Observations on Instigating Cause of Pain. W. J. Larkin, Scranton.—p. 348.
Use of Fever Therapy with Children. M. B. Ferderber, Pittsburgh.—p. 354.
Analysis of 2,500 Hospital Deaths. H. H. Donaldson, Pittsburgh.—p. 357.
Gonadotropic Hormone Therapy in Cryptorchidism and Disturbances of Spermatogenesis. J. F. McCabey, Philadelphia.—p. 359.
Egocentric, Emotionally Unstable Type of Psychopathic Child: Some Remarks on Etiology. J. Chornyak, Pittsburgh.—p. 364.
Hyperthyroidism. L. G. Cole, Blossburg.—p. 366.
Arsenical Herpes Zoster. F. C. Knowles and W. W. Bolton, Philadelphia.—p. 370.
The Deaf Individual and Hearing Aids: A Problem for Otologists or Laymen? M. S. Ersner, Philadelphia.—p. 373.
Significance of Abdominal Pain and Tenderness. J. P. Griffith, Pittsburgh.—p. 376.
Nephrolithiasis and the General Practitioner. C. A. W. Uhle, Philadelphia.—p. 382.
*Sulfanilamide Rash. F. S. Mainzer, Huntingdon.—p. 386.
Diagnosis and Treatment of Cancer of Body of Uterus. B. M. Anspach and J. B. Montgomery, Philadelphia.—p. 387.

Sulfanilamide Rash.—A toxic effect, consisting of nausea, fever, dizziness, itching of the skin, cyanosis and cutaneous eruption, produced by the administration of sulfanilamide, is reported as occurring in three cases treated by Mainzer. The reaction appeared in two patients between the seventh and ninth day, but in one the first symptoms came on the second day. The symptoms began with fever and itching of the skin, followed by nausea, cyanosis and a cutaneous eruption. The temperature ranged from 101.4 to 104.3 F., reaching its normal peak on the third day. Cyanosis of the lips was observed, which is attributed by various writers to the presence of methemoglobinemia or sulfhemoglobinemia. The rash was most prominent on the chest, abdomen, face and extremities. The eruption was of the maculopapular type, slightly raised from the unaffected skin and red or brownish. The lesions ran a rapid course, fading out almost completely within nine days of onset. The evidence that the eruption was produced by sulfanilamide is strong, owing to the fact that when the drug was discontinued the symptoms faded out.

Public Health Reports, Washington, D. C.

53: 113-160 (Jan. 28) 1938

Pathologic Histology in Mice Produced by Intravenous Inoculation with Toxin of Clostridium Sordellii (Bifermentans). R. D. Lillie.—p. 113.
Pollution Problem in the Ohio River Drainage Basin. H. R. Crohurst.—p. 121.

53: 217-246 (Feb. 11) 1938

Harmful Industrial Dusts. R. R. Sayers.—p. 217.
Production of Tumors in Mice of Strains C_3H and Y by Dibenzanthracene and Methylcholanthrene. H. B. Andervont.—p. 229.
Pulmonary Tumors in Mice: V. Further Studies on Influence of Heredity on Spontaneous and Induced Lung Tumors. H. B. Andervont.—p. 232.

53: 247-280 (Feb. 18) 1938

Role of Airplane Dusting in Control of Anopheles Breeding Associated with Impounded Waters. R. B. Watson, C. C. Kiker and H. A. Johnson.—p. 251.
Reliability of Medical Judgments on Malnutrition. M. Derryberry.—p. 263.

Southern Medical Journal, Birmingham, Ala.

31: 127-232 (Feb.) 1938

Angioid Streaks of Choroid and Pseudoxanthoma Elasticum. G. E. Clay and J. M. Baird, Atlanta, Ga.—p. 127.
*Diethylene Glycol Poisoning in the Human. K. M. Lynch, Charleston, S. C.—p. 134.
A Generalized Case of Morphea Guttata. H. Hailey and H. Hailey, Atlanta, Ga.—p. 138.
Inquiry into Nature of So-Called Syncytioma: Reconsideration of Chorionepithelioma. R. B. Greenblatt and E. R. Pund, Augusta, Ga.—p. 140.
Roentgen Diagnosis and Treatment of Benign Giant Cell Tumor of Bone. J. A. Meadows and K. F. Kesmodel, Birmingham, Ala.—p. 148.
Regional Ileitis: Clinical Report of Two Cases. E. B. Frazer and W. R. Meeker, Mobile, Ala.—p. 153.
Combined Active Immunization for Diphtheria and Tetanus: Plea for Its Routine Use. J. V. Cooke, St. Louis.—p. 158.
Epidemiologic Study of Approximately 400 Cases of Cerebrospinal Meningitis in Kentucky with Observations on Comparative Value of Meningococcus Antitoxin and Antibacterial Serum. P. E. Blackerby and F. W. Caudill, Louisville, Ky.—p. 161.
Evaluation of Skin Tests for Pregnancy. P. Graffagnino and E. von Haam, New Orleans.—p. 169.
Breech Presentation: Review of 133 Consecutive Cases from Touro Infirmary. H. Meyer, New Orleans.—p. 173.
Some Practical Considerations Relative to Complications of Mastoiditis. J. H. Moore, Huntington, W. Va.—p. 175.
Hypoglycemic Therapy in Psychoses of Long Standing: Studies of Blood Sugar an Blood Cholesterol with Case Report. H. D. Allen Jr., Milledgeville, Ga.—p. 179.
*Symptomatic Treatment of Parkinsonian Syndrome with Cobra Venom. R. F. Gayle Jr. and J. N. Williams, Richmond, Va.—p. 188.
Herpes Zoster and Chickenpox. C. C. Barrett, Lexington, Ky.—p. 192.
Some Evidences of Tissue Interdependence During Development. F. H. Swett, Durham, N. C.—p. 196.
The Present Status of Gastroscopy. E. H. Gaither, Baltimore.—p. 203.
Food Allergy as Cause of Vasomotor Rhinitis. C. H. Eyermann, St. Louis.—p. 210.
Fibrinous Pericarditis Following Thyroidectomy. P. W. Spear, Baltimore.—p. 215.
Teaching of Syphilis to Undergraduates and Postgraduates. R. H. Kampmeier, Nashville, Tenn.—p. 218.
Modern Medical Education as it Applies to Urology. H. W. McKay, Charlotte, N. C.—p. 224.

Diethylene Glycol Poisoning.—Lynch describes four cases resulting in death from the ingestion of the new "elixir" preparation of sulfanilamide in diethylene glycol solvent. It appears that the lethal constituent was diethylene glycol, apparently used by the manufacturer simply as a solvent. Study of the necropsy material from these cases reveals an interesting and somewhat unique picture, similar to that produced by certain other poisons and yet apparently distinct. They may be summed up as showing in common a characteristic acute necrosis of the secretory tubules of the kidney and an equally characteristic central lobular necrosis of the liver, both conditions apparently based on direct epithelial damage. Two cases showed infarction of the renal cortex, in one complete in both organs, like embolic infarction and apparently resulting from vascular closure in the areas affected. In at least one case there was an acute gastritis in which the glandular epithelium of the stomach was damaged just like that of the kidney and liver. All the patients had an early acute lobular pneumonia by the time of death.

Treatment of Parkinsonism with Cobra Venom.—It is generally accepted that cobra venom is a neurotoxin which strikes the higher nerve centers of the brain. The use of cobra venom solution in the treatment of the parkinsonian syndrome suggested itself to Gayle and Williams because it has been proved that intramuscular injections may relieve chronic pain; and in view of the fact that certain patients having paralysis agitans suffer from pain, it was decided to use this product in the hope of relieving parkinsonism. It was found in certain cases of the parkinsonian syndrome that not only was the pain relieved but certain other symptoms, such as increased spasticity and tremor, were benefited. Cobra venom was used for eighteen patients with well developed signs and symptoms of the parkinsonian syndrome. They exhibited the typical signs of muscular rigidity, nonintention tremors, masked facies, pains and altered gait. The ages of the patients varied from 21 to 69 years. The method of treatment followed in each case was to give the patient 0.5 cc. of cobra venom intramuscularly the first day and then 1 cc. every other day for ten doses. If no subjective improvement was effected by this number of doses, the treatment was discontinued. In all who showed improvement, the interval between doses was lengthened with no increase

in symptoms. The most striking effect of the cobra venom was the relief of pain. Usually the pains were relieved after about the fourth or fifth injection, and this has lasted until the present time. In 67 per cent of the cases there was marked subjective improvement; but little objective change was noted. These patients stated that there seemed to be less muscular rigidity and that they were able to perform tasks which were impossible before treatment. An improvement was noted in their attitudes, in that they were encouraged, more cheerful and decidedly less nervous. Thirty-three per cent of the patients who showed no improvement were older than the average and the duration of the disease was much longer. Cobra venom solution is a valuable aid in the symptomatic treatment of the parkinsonian syndrome, it has a cumulative effect when given in small doses intramuscularly and it can be partially substituted for drug therapy in certain cases of the disease.

Western J. Surg., Obst. & Gynecology, Portland, Ore.

46: 61-126 (Feb.) 1938

The Cancer Problem. F. W. Lynch, San Francisco.—p. 61.
Cerebral Hemorrhage in the New-Born. H. F. Dietrich, Beverly Hills, Calif.—p. 69.
Complete Rectal Prolapse: Fascial Repair. C. W. Mayo, Rochester, Minn.—p. 75.
Endometriosis Simulating Tumors of the Bowel: Collective Review. Elisabeth A. Murphy, San Francisco.—p. 78.
Ileus in Pregnancy. J. M. Slemons and N. H. Williams, Los Angeles. —p. 84.
San Francisco's First Successful Cesarean Section: Performed by Elias Samuel Cooper, Founder of California's First Medical School: Division I: Presidential Address. L. A. Emge, San Francisco.—p. 101.

West Virginia Medical Journal, Charleston

34: 49-96 (Feb.) 1938

Modern Anesthesia. B. F. Brown, Huntington.—p. 49.
*Ulcers Due to Varicose Veins and Lymphatic Blockage. H. H. Trout, Roanoke.—p. 54.
Benign Choriomeningitis (Aseptic Meningitis): Report of Seventeen Cases. D. C. Ashton, Beckley.—p. 61.
Diagnosis and Treatment of Uterine Bleeding. J. E. Andes, Morgantown.—p. 65.
Value and Limitations of Radiation Therapy. H. W. Jacox, Pittsburgh. —p. 73.
Relative Frequency of Idiopathic and Toxic Fatal Hepatitis in the United States. D. A. Bryce, Plainfield, N. J.—p. 76.
A Method for Closure of Friable or Frail Peritoneum. H. C. Myers, Philippi.—p. 79.

Ulcers from Varicose Veins and Lymphatic Blockage.—Trout believes that for the successful treatment of intractable ulcer due to varicose veins and lymphatic blockage the removal of the diseased tissue, in addition to the removal of the fascial barrier and the regeneration of the lymphatics, is essential. In addition to the work of Kondoleon there has been much experimental work to show conclusively that lymphatics do regenerate. The beneficial results following the removal of the fascia might be due to having the superficial tissues drained by the deep lymphatics. It is the author's belief that the edema and the like are due not only to the blockage of the venous system but also to the obstruction of the return of lymph. The obstruction of the lymph is due to the blockage of the lymph channels and nodes by the fibrous tissue which follows the infection. In such cases both the width and the length of the fascial strip removed should be greater than the amount of superficial fat removed, when the lymphatic block is confined to the superficial lymphatics. To establish a free path for the unhampered regeneration of the lymphatics, it is necessary to remove the strip of fascia higher than the edema, and particularly is this true when the swelling is the result of involvement in the deep vessels and lymphatics. Of course, in these cases the strip of fascia is removed from both the inner and outer sides. Since 1917 the author has treated forty-one cases of intractable ulcers with success. By "success" he does not mean to imply that the leg has become normal or that it is as good as the opposite and unaffected leg. However, these patients have been relieved from pain, the ulcers have completely healed, the swelling of the leg has been greatly reduced and they have returned to their various occupations without any marked degree of physical discomfort or the necessity of wearing an elastic stocking or applying Unna's paste legging.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Anaesthesia, Manchester

15: 41-84 (Jan.) 1938

Anesthetic Twitches. F. Cartwright.—p. 43.
Toxic Jaundice Following Administration of Pentothal. J. M. Vaizey. —p. 55.
Some Observations on Pentothal Sodium. C. P. Dixon.—p. 60.
Evipan Sodium in Dental Surgery. J. Bunyan.—p. 62.
*Chin Retraction: New Sign in Anesthesia. J. U. Human.—p. 66.

Chin Retraction.—Human observed the occurrence of chin retraction about eighteen months ago in more than 50 per cent of the 600 patients he has anesthetized to the third stage of anesthesia. The sign consists of a downward movement of the larynx and chin with each inspiration. In cases in which the chin does not actually move, the tightening of the chin depressor muscles can always be either seen or felt just below the chin with the fingers. Usually the chin moves visibly. When eyeball activity ceases, the corneal reflex disappears and the pupil begins to dilate, chin retraction begins and, as the anesthetist always holds the mask with one or two fingers under the chin, he can feel the rhythmic tightening of the muscles under his fingers without looking at the patient and thus determine the degree of anesthesia. This sign remains active and obvious throughout the further deepening of anesthesia, and in ascending anesthesia it stops abruptly at the upper level of the second plane. The most reasonable explanation of chin retraction would be that the muscles, which by their tone hold the larynx in position, relax at the bottom of the first plane so that with each downward movement of the diaphragm the lungs are drawn downward bodily for about 1 cm. carrying the trachea and larynx with their attachments downward with them. It occurs whether ether, chloroform or nitrous oxide is being given. Chin retraction is always more marked when a closed system of anesthesia with rebreathing is employed.

British Journal of Tuberculosis, London

32: 1-60 (Jan.) 1938

Subacute Miliary Tuberculosis: Case. L. S. T. Burrell.—p. 3.
Tuberculosis in New Zealand. I. C. Macintyre.—p. 5.
The Tuberculosis Problem in India. C. Frimodt-Möller.—p. 11.
Ancillary Method in Treatment of Pulmonary Tuberculosis. W. D. W. Brooks.—p. 14.
*Trauma as Factor in Pulmonary Tuberculosis. M. H. Skolnick.—p. 19.
Swallowing the Sputum. C. G. Learoyd.—p. 24.

Trauma in Pulmonary Tuberculosis.—Skolnick cites the case of a fireman who seemed to be in perfect health previous to an injury (exposure to adverse conditions of physical fatigue, exhaustion and water drenching) as evidenced by his personal history, family history and occupational records. While he was working under extreme conditions of exposure there was a progression of his pulmonary tuberculosis. Although the symptoms were apparently present earlier, the condition was not diagnosed as tuberculosis until approximately eight months following the injury. Medical authorities substantiate the opinion that external factors frequently bear an important causal relationship in the activation of dormant tubercle bacilli into the disease of tuberculosis.

British Medical Journal, London

1: 157-214 (Jan. 22) 1938

Diet in General Practice, with Especial Reference to Amount of Food Given. L. Cole.—p. 157.
Coal-Tar Naphtha for Destruction of Bedbugs: Application in Dwelling Houses and Tenements. S. A. Ashmore and A. W. M. Hughes.— p. 160.
Recovery Period in Anterior Poliomyelitis. N. M. Harry.—p. 164.
*Treatment of Acute Poliomyelitis: Analysis of Sister Kenny's Methods. F. H. Mills.—p. 168.
Posttraumatic Parkinsonism and Effect of Atropine. T. F. Main.— p. 170.
Retention of Urine Following Excision of Rectum. H. T. Simmons.— p. 171.

Treatment of Acute Poliomyelitis.—The new system of treatment in acute poliomyelitis that Mills describes has produced results over a period of twenty years so promising that it appears that one's views as to the degree of recovery pos-

sible will have to change. In opposition to the accepted theory the view is taken that the pain in the extremities is almost completely vascular in origin. The muscular pain results from venous engorgement and consequent anoxia of the paralyzed muscles. The venous return from the extremities is influenced mainly by tone and activity of the muscles. In poliomyelitis the interference with this venous return is often of extreme degree. At first there is venous stasis, and later on capillary stasis and capillary paralysis. As a result mild trophic changes develop in the skin, bones, joints, fasciae and especially the muscles. Immobilization of paralyzed limbs, with consequent vascular catastrophe, leads to contraction of the muscle sheath and anemia of muscle fibers, with subsequent mild fibrosis. The ischemic pseudoparalysis is accentuated by stretching and relaxation of muscles, tending to cause a permanent shortening of the length of the fibers and often resulting in slight deformities. The irritation stage is an artificial stage, which may invariably be overcome in two or three days by a well regulated system of frequent passive movement, fomentation and hydrotherapy. In no case does pain persist more than three days, although it will usually recur in the early mornings after the limb has been rested during the night. Cutaneous hyperesthesia also disappears under the treatment. As soon as the temperature drops, the active phase of reeducation is started; that is, reeducation is begun within one week of the onset of paralysis. The restoration of circulation is accomplished by hydrotherapy which makes use of the rapid alternation of hot and cold sprays in the bath. The limbs become suffused with pink within ten minutes, the areas last to lose their cyanotic appearance being those which overlie the paralyzed muscle groups. By this simple measure applied daily trophic changes are avoided and the later application of such operative procedures as sympathetic ramisection are rendered unnecessary. Briefly, instead of being dealt with by rest and immobilization in the acute stage, the affected limbs must be treated energetically, by foments, by hydrotherapy and by movement through every range of each joint every two hours, and a finely graded system of reeducation must be started as soon as possible, usually within the first week of paralytic manifestations. Under such a regimen wasting of paralyzed muscles occurs only to a small degree. It is not claimed that this treatment will cure all cases at all stages of the disease. So far only thirty-five cases have been treated in the early stages, but in view of the degree of improvement in these and in 1,400 chronic cases, it is claimed that Sister Kenny's methods will give the maximal recovery possible in every case treated within the first two months of the disease.

Journal of Laryngology and Otology, London

53: 97-172 (Feb.) 1938

*Aural Vertigo: Clinical Study. A. J. Wright.—p. 97.
Osteomyelitis of Petrous Pyramid. G. Kelemen.—p. 113.

Aural Vertigo.—Wright discusses seventy-three cases of vertigo from suppuration of the middle ear. The disease does not result from a lesion in the middle ear but is primarily in the labyrinth. It is marked by an increased irritability of the labyrinth, as shown in the cochlea by hyperacusis and in the vestibule by an abnormal reaction to normal stimuli, such as movements of the head, or to minimal abnormal stimuli, such as some alteration of tension in the middle ear. Focal infection is invariably present, and frequently other lesions exist, especially chronic iritis. All patients with aural vertigo treated by eradication of a septic focus or foci are now completely free from vertigo. The author believes that cases of labyrinthine vertigo, which have been regarded as of unknown or doubtful etiology, can be grouped together as belonging to a single disease which he calls "focal labyrinthitis." This disease is an inflammation of the labyrinth. He bases this view on the occurrence of nerve irritation, both auditory and vestibular, signs of tension and progressive loss of function, and on the analogy with a known inflammatory lesion, chronic iritis. It is not, in his opinion, the result of disease in the middle ear. That it is secondary to a focus of infection is shown by the invariable presence of such a focus and, to a greater degree, by the arrest or even cure of the disease when such a focus is eradicated. This he believes is the only hypothesis that explains the many isolated observations in the literature which do not fit into the present somewhat indefinite ideas of its pathology.

J. Royal Inst. Public Health and Hygiene, London

1: 185-248 (Jan.) 1938

Evolution of Chronic Rheumatism with Corresponding Treatment. R. F. Fox.—p. 199.
Knowledge Is the Key to Health. J. Fenton.—p. 221.
Clinical Basis for Administration of Tuberculosis. C. H. C. Toussaint.—p. 228.
Radiology and Rheumatic Backache. S. G. Scott.—p. 236.

Lancet, London

1: 181-238 (Jan. 22) 1938

Role of Active or Passive Immunization in Control of Enteric Infection. W. W. C. Topley.—p. 181.
Normal Ventriculograms in Tumors of Cerebral Hemispheres. J. Pennybacker and S. P. Meadows.—p. 186.
Indications for Collapse Therapy in Pulmonary Tuberculosis. W. Behrens.—p. 190.
Serum Reactions After Injection of Concentrated Therapeutic Serum. Hilda M. Davis.—p. 193.
Preparation 2020: New Blood Pressure Raising Drug. F. A. Jones, with observations on its use in asthma by C. Wilson.—p. 195.
*Nature of Subcutaneous Spherules in Some Cases of Ehlers-Danlos Syndrome. F. P. Weber and Janet K. Aitken.—p. 198.
Fatal Infections by Hemolytic Streptococcus Group B. R. M. Fry.—p. 199.
*Incidence of Weil's Disease Among Coal Miners in Northumberland and Durham. W. G. A. Swan and J. A. McKeon.—p. 201.

Subcutaneous Spherules in Ehlers-Danlos Syndrome.—Weber and Aitken believe that the presence of numerous freely movable subcutaneous spherules, especially where the skin is loose, may be included as a fifth main sign of the Ehlers-Danlos syndrome, though it has not been recorded in most cases. These nodules or "spherules" are usually the size of a pea or smaller and slip about under the skin, apparently in the superficial portion of the subcutaneous fat. By light pressure with the finger they can easily be moved an inch or considerably more without any pain or tenderness being complained of. Owing to their hardness one would not expect them to be lipomas, but by microscopic examination they have been found to consist of fat. The authors think that they are sprouting (budlike) lobules of subcutaneous fat, which by gradual thinning and atrophy of their pedicles become more or less free bodies in the loose subcutaneous tissue. Their presence in considerable number constituted the most remarkable feature of the case that they report. There were only a few of the "atrophic" scars which usually constitute the most important character of the Ehlers-Danlos syndrome. The Ehlers-Danlos syndrome is probably not so rare as is supposed. Since December 1936 cases from three families have been demonstrated before the dermatologic section of the Royal Society of Medicine in London, and other cases have been heard of from other parts of England.

Weil's Disease Among Coal Miners in Northumberland.—In an effort to estimate the incidence of subclinical infection with Leptospira icterohaemorrhagiae among coal miners in the northeast of England, Swan and McKeon visited two collieries in the autumn of 1936. In one of these, six cases of Weil's disease occurred between February 1935 and December 1936. In the other colliery three cases had occurred in May and June 1936. In all the diagnosis had been confirmed by serologic agglutination. Among the miners at these collieries 101 volunteered to give blood for serologic examination. All gave negative agglutination results except two from the first colliery. These two men gave histories of a serious illness with jaundice eighteen months previously which seemed to be clinically identical with Weil's disease. Both their serums agglutinated to a titer of 1:300. The remaining ninety-nine men for the most part gave no history of any previous illness and none gave a history of anything in the least resembling Weil's disease. All their serums showed a negative agglutination at a titer of 1:30. These results are at variance with those previously published relating to sewer and fish workers. There seems to be no adequate explanation for this and the conclusion is that the incidence of subclinical Weil's disease among coal miners in the northeast of England is less than might have been anticipated.

Medical Journal of Australia, Sydney

1: 91-138 (Jan. 15) 1938

Some Modern Phases of Laboratory Diagnosis. H. A. Woodruff.—p. 95.
Insulin Treatment of Schizophrenia. C. Farran-Ridge and P. G. Reynolds.—p. 100.
Distribution of Cysticercus Bovis in Sites of Election in the Ox. W. J. Penfold, H. B. Penfold and Mary Phillips.—p. 107.
Magnesium and Carbohydrate Metabolism. A. B. Corkill and A. H. Ennor.—p. 113.

Practitioner, London

140: 1-112 (Jan.) 1938

Use of Thyroid Preparations. G. R. Murray.—p. 1.
Use of Parathyroid Preparations and Calcium Salts. D. Hunter.—p. 11.
Use of Adrenal Gland Hormones in Treatment. S. L. Simpson.—p. 28.
Use of Pituitary Preparations. P. M. F. Bishop.—p. 38.
Use of Female Sex Hormones in Treatment. D. MacLeod.—p. 45.
Use of Male Sex Hormones. E. W. Riches.—p. 60.
Diet in Health and Disease: VII. Diet in Endocrine Disorders and Obesity. D. M. Lyon.—p. 68.
Clinical Picture of Acute Appendicitis. H. Dodd.—p. 77.
Injection Treatment of Hernia. M. Lee.—p. 93.

Quarterly Journal of Medicine, Oxford

7: 1-170 (Jan.) 1938

*Type of Gonococcic Bacteremia with Characteristic Hemorrhagic Vesiculopustular and Bullous Skin Lesions. H. Keil.—p. 1.
Insulin Resistance in Diabetes Mellitus and Effect of Dietary Carbohydrate. O. L. V. de Wesselow and W. J. Griffiths.—p. 17.
Overstimulation of Vagus Nerve in Rheumatic Fever. J. D. Keith.—p. 29.
Some Rare Types of Macrocytic Anemia. L. S. P. Davidson and H. W. Fullerton.—p. 43.
Radiology of Pulmonary Infarction. K. S. Smith.—p. 85.
*Marchiafava-Micheli Syndrome of Nocturnal Hemoglobinuria with Hemolytic Anemia. R. B. Scott, A. H. T. Robb-Smith and E. F. Scowen.—p. 95.
Hyperinsulinism Due to Pancreatic Islet Adenoma. R. Fraser, W. S. Maclay and S. A. Mann.—p. 115.
Hemolytic (Spherocytic) Jaundice in Adult. M. C. G. Israëls and J. F. Wilkinson.—p. 137.
Anterior Pituitary Lobe in Graves' Disease and in Myxedema. C. L. Cope.—p. 151.

Gonococcic Bacteremia and Cutaneous Lesions.—Keil discusses a form of gonococcic bacteremia in which the patients often appear to be profoundly ill and in which the initial clinical impression seems consistent with a poor or guarded prognosis. This belief is strengthened when there are cardiac murmurs and the blood cultures are positive. Despite this, recovery is the rule. The course of these cases is often explained on the basis of healed gonococcic endocarditis accompanied by hemorrhagic cutaneous lesions, but the author's observations are at variance with this hypothesis. Although the literature contains isolated reports of this dermatosis, its diagnostic value has not been sufficiently recognized and in many instances the cutaneous lesions have been regarded as either a simple pyoderma, a drug eruption, a variant of multiform erythema or a nonspecific toxic manifestation. The cultivation of the gonococcus from the blood stream, joints, skin and other structures and its isolation after death from vegetations in the heart constitute evidence that this organism invades the circulation. An intermittent bacteremia is inadequate evidence that the heart valves are unaffected. It is probable that gonococci gain access to the general circulation through the superficial or deeper venous channels. The evidence for gonococcic bacteremia appeared to be unequivocal in four of the five cases cited, the organism having been isolated from the blood, articulations or cutaneous lesions. In the remaining instance the clinical course and the features of the eruption pointed to a systemic gonococcic infection. In general the syndrome is characterized by the occurrence of fever, joint manifestations and a special type of dermatosis. The condition has a duration of from several days to a few months; in some instances a protracted course is attributable to a residual, slowly healing deforming arthritis rather than to continuation of the bacteremia. The local focus from which dissemination takes place may be active and acute; in other instances the primary process is clinically inactive and has apparently been healed for weeks, months or even years. There are no remarkable fluctuations of temperature such as are seen in the average case of gonococcic endocarditis. In many instances there is continued fever owing to the presence of an arthritic process rather than to a persistent bacteremia. Articular disease is a fairly constant feature, with but few exceptions. The type of joint manifestation cannot be differentiated from that observed in ordinary uncomplicated gonococcic arthritis. The morphologic attributes of the dermatosis, considered in relation to the clinical picture, provide features that often lead the observer to diagnose correctly an illness otherwise obscure. The eruption is typically composed of a scanty number of lesions varying from one or two to six or eight in all; in occasional instances they may be distributed over the entire body. As a rule the lesions are discrete; rarely does coalescence occur as an incidental event in the course of a profuse eruption. In typical cases the extremities are affected, with particular favor for their distal parts. Less commonly, isolated lesions are encountered on the trunk, face, scalp and oral mucous membranes, where they appear to be less easily recognized. The tendency to occur in crops is a striking phenomenon. In the majority of cases there were, on the average, two additional outbreaks of lesions. Generally the eruption arises during the febrile period, but rarely further development of lesions may be observed during intervals of apyrexia. The primary element is an erythematous macule that speedily acquires a central vesicle or pustule. In typical examples hemorrhage occurs in the center of the lesion, and in many cases the exudation of fluid and cells causes bullous formation. The classic lesion in full development is a hemorrhagic purulent vesicle or bulla, surrounded by a more or less broad erythematous areola. Occasionally an intermediary zone of relative pallor is noted. Exudation may at times be so pronounced that rupture occurs. A smear of the contents of a lesion reveals numerous pus cells in various stages of disintegration. Bacterial stains on cutaneous sections have their greatest field of diagnostic usefulness in cases in which the organism is difficult to isolate, but it will be generally necessary to study fresh or young efflorescences.

Nocturnal Hemoglobinuria with Hemolytic Anemia.—Scott and his colleagues record two cases of the Marchiafava-Micheli syndrome of nocturnal hemoglobinuria with hemolytic anemia which were carefully studied during life and in which complete postmortem examinations were made. The clinical picture is clear cut and the main features are moderate hepatomegaly, anemia, hemoglobinemia, paroxysmal nocturnal hemoglobinuria, persistent hemosiderinuria and a liability to venous thromboses. The condition runs a protracted course and terminates in death. Splenectomy is without avail. The chief morbid anatomic changes are thromboses of the central veins of the liver with zonal hepatic necroses, marked siderosis of the renal tubules and erythroblastic hyperplasia of the bone marrow. It is suggested that these pathologic changes are the result of prolonged intravascular hemolysis. The possibility that some obscure chronic acquired hemolytic anemias may be larval forms of the Marchiafava-Micheli syndrome is suggested.

Japanese Journal of Gastroenterology, Kyoto

9: 263-372 (Dec.) 1937

Studies on Metabolism of Acetone Bodies in the Kidneys. T. Terashima.—p. 263.
Nutritional Significance of Parenteral Administration of Polysaccharides. T. Terashima.—p. 273.
Clinical Consideration on Change in Amount of Glucose Contained in the Blood in the Loading Test with Galactose. S. Yasaki and T. Terashima.—p. 286.
Influence of Blood Components During Renal Disturbance on Amount of Glutathion Contained in Various Organs. W. Nishihiro.—p. 294.
Influence of Blood Component During Renal Disturbance on Oxido-reductive Ability of Various Organs. W. Nishihiro.—p. 304.
Behavior of Liver in Metabolism of Amino Acids: Reports II and III. I. Kitamura.—p. 312.

Japanese Journal of Obstetrics & Gynecology, Kyoto

20: 559-658 (Nov.) 1937

Short Wave Treatment of Endocrine System, the Diencephalon and Mesencephalon. J. Samuels.—p. 560.
Method for the Diagnosis of Pregnancy and Ovulation. J. Samuels.—p. 579.
Malignant Tumor and Tuberculosis: Part V. Tuberculosis and Patients with Carcinoma Uteri from Point of View of Surface Tension of Serum. S. Imamura.—p. 596.
Some Influences on Physiologic Duration of Pregnancy. H. Shinoda and O. Ohta.—p. 600.
Experimental Study on Effect of Functions of Ovary and Anterior Pituitary Lobe on Narcosis: Parts I to VI. S. Sasaki.—p. 613.

Presse Médicale, Paris

46: 225-248 (Feb. 12) 1938

*Certain Anomalies of Tuberculin Reactions. O. Paisseau, J. Valtis and E. Kayem.—p. 225.
Nephrotyphoid and Nephritis of Typhoid Fever. J. Olmer and A.-X. Jouve.—p. 226.
Endocrine Disorders of the Skeleton. G. Coryn.—p. 228.

Anomalies of Tuberculin Reactions.—Paisseau and his associates point out that some investigators have called attention to the existence of negative cutaneous reactions in children or adults who have been in close and prolonged contact with carriers of tubercle bacilli. The authors themselves observed children living in prolonged contact with tuberculous parents who reacted negatively to tuberculin tests, not only to cutaneous reactions but also to intradermal tests with 0.1 cc. of a 1:100 solution of tuberculin. In the course of the last three years the authors have collected seventeen cases of this type. The object of their report is not to expose the shortcomings of the tuberculin test but rather to call attention to certain anomalies: (1) long persistence of the dissociation between a negative cutaneous reaction to tuberculin and the positive intradermoreaction to this substance, and (2) change of positive to negative cutaneous reactions. They discuss these anomalies and cite case histories in which they observed them. They reach the conclusion that it is indisputable that an organism which is free from tuberculosis never reacts to a cutaneous tuberculin test, but it cannot always be deduced from this that a negative cutaneous reaction is proof of the nonexistence of tuberculosis. Aside from that, there is a conclusion which has long been arrived at from the fact that a considerable proportion of subjects present a positive intradermal tuberculin reaction without a cutaneous reaction. What should be emphasized is that it is necessary to consider the change from a negative cutaneous reaction as evidence of a primary tuberculous infection.

Revue de la Tuberculose, Paris

3: 1121-1264 (Dec.) 1938

Extrapleural Pneumothorax. M. Schmidt.—p. 1122.
Extrapleural Pneumothorax: Remarks on Report by Schmidt. A. Maurer.—p. 1137.
Extrafascial Apicolysis. M. Iselin.—p. 1139.
Pleural Depressions in Course of Artificial Pneumothorax and Their Variations with the Changes in Position of the Subject. C. Spezzafumo.—p. 1152.
*Blood Transfusions in Chronic Tuberculosis of the Lungs, Lymph Nodes and Serous Membranes. J.-O. Krizevski.—p. 1162.

Blood Transfusion in Tuberculosis.—Krizevski points out that as late as 1934 E. Hesse of the institute for blood transfusion shared the opinion of Bürkle de la Camp and Schiff about the contraindication to transfusion as a variety of protein therapy in patients with tuberculosis. It was the author's object to determine to what extent blood transfusion can be employed in the treatment of tuberculosis. Moreover, it seemed desirable to know whether tuberculosis represents a contraindication to blood transfusion in patients in whom other conditions such as traumas make transfusions necessary. Before resorting to transfusions in the clinic, the author made experimental studies on the action exerted by blood transfusions on the evolution and propagation of tuberculous processes. He made these experiments on rabbits which had been inoculated with cultures of bovine and human tubercle bacilli. The observations on the rabbits convinced him that blood transfusion exerts no special action on the propagation and evolution of the tuberculous process. Nevertheless, the question of the possibility of an unfavorable action of blood transfusion in tuberculous patients had not been solved as yet. The great diversity of the forms of the tuberculous process, the various localizations and the forms of development raise the question as to the choice of patients and of the propitious moment for the transfusion. The author made his observations on seventy-nine patients. Transfusion can be resorted to in tuberculous patients when a concomitant disease or a traumatism indicates it. In such cases blood transfusion is contraindicated only in progressing chronic extensive cavernous tuberculosis. As a therapeutic procedure, transfusion is indicated in the following cases: in serous disorders such as pleurisy with effusion, peritonitis and polyserositis, in voluminous adenopathies and in focal pulmonary tuberculosis with perifocal and pneumonic phenomena. Blood transfusion, however, is contraindicated in all forms of fibrous tuberculosis and in sclerosis of the lung. The most favorable time for the transfusion is that period of the disease when the resources of biologic immunity in the patient are in the ascending state. The blood transfusion should be repeated in cases in which the effect of the first transfusion is not sufficient. The author observed no parallelism between the effect of the transfusion and nonspecific protein reactions.

Schweizerische medizinische Wochenschrift, Basel

68: 169-188 (Feb. 19) 1938

Diagnostic and Therapeutic Problems of Focal Infection. A. Grumbach.—p. 169.
New Aspects of Problem of Scorbutic Dystrophy. P. Rohmer.—p. 173.
*Relations Between Acetonuria and Menstruation. H. Iselin.—p. 175.
New Aspects of Brucella Abortus Infection. K. F. Meyer.—p. 176.
Therapy of Neurosympathetic Disturbances. H. Bauer.—p. 178.
Bee Venom in Iontophoresis. P. Descoeudres and T. Wacker.—p. 179.

Acetonuria and Menstruation.—Iselin says that in 1930 he first directed attention to a possible relationship between acetonuria and menstruation. He had observed that acetonuria occurs chiefly in little girls and that, moreover, its appearance is cyclic. He had also found that acetone was present in the breath of many women before and at the beginning of the menstrual period. His attention was again drawn to this problem by a case he observed recently: A girl, aged 15 years, had been subject to periodic vomiting since the age of 3 years. With the onset of the menstruation, the attacks ceased. The author considers the periodic acetonuria in girls before and after onset of the menstrual flow not so much a pathologic process as the sign of a physiologic-chemical process, of a menstrual acetonemia. This acetonemia might be elicited by a function of the incompletely developed ovary or, even more likely, by the hypophysis. At any rate, the author thinks that the periodic acetonuria is in some way connected with menstruation. This symptom, he says, is accompanied by a hypersensitivity to substances that impair the liver, such as chloroform anesthesia, and he advises that such substances should not be administered when acetone has been demonstrated in the urine of menstruating women.

Archivio Italiano di Chirurgia, Bologna

47: 481-600 (Dec.) 1937

Pathogenesis of Juvenile Spontaneous Gangrene: Behavior of Blood Vessels in Experimental Hyperadrenalism, Castration and Implantation of Ovaries. N. Maggi and L. Parodi.—p. 481.
Lesions to Body by Electric Current. L. Ghetti.—p. 505.
*Behavior of Dextrose and Chlorides in Cerebrospinal Fluid in Postoperative Period. G. Canger and G. Radici.—p. 550.
Surgical Treatment of Painful Syndromes from Hemisacralization of Fifth Lumbar Vertebra. S. Mondolfo.—p. 561.
*Power of Absorption of Ureter: Experiments. F. Grieco.—p. 581.

Dextrose and Chlorides in Cerebrospinal Fluid.—From their observations on eighteen patients, Canger and Radici found that the amount of dextrose and chlorides in the cerebrospinal fluid is increased during the postoperative period. The variations are not related to the type of anesthesia used and do not parallel those in the blood. Dextrose increases more in the cerebrospinal fluid than in the blood. It increases also if glycemia decreases. However, it never reaches pathologic proportions. The ratio of dextrose in the blood and the cerebrospinal fluid is diminished. The chlorides in the cerebrospinal fluid increase, whereas those in the blood plasma decrease. The ratio is diminished. The authors point out that the variations are due to dysfunction of the blood-central nervous system barrier which is concerned in the regulation of the passage of plasmatic substances to the fluid. The functions of the barrier are controlled by the stimulation of the chemical substances in the blood, which depends on the more or less intense concentration of the substance, especially proteins in the blood plasma. The humoral variations induced by any surgical intervention, especially the proteins in the blood, are the cause of dysfunction of the blood-central nervous system barrier with consequent changes of the fluid. The authors believe that the modifications of the cerebrospinal fluid during the postoperative period are not related to the nervous disturbances which may appear in the course of the period.

Power of Absorption of Ureter.—Grieco experimented on rabbits to determine the power of absorption of the ureter, whether normal between two ligations or mechanically dilated without ligations. He concludes that the normal ureter constantly and rapidly absorbs solutions of india ink, bacterial emulsions and solutions of strychnine nitrate. The rapidity of absorption, in order of frequency, is strychnine solution, bacterial emulsion and india ink. The absorption of toxic doses of strychnine nitrate is more rapid when the poison is injected into the ureter than when it is injected subcutaneously. Absorption by dilated ureters takes place slowly. Solutions of strychnine injected into dilated ureters did not poison the animals, probably because of the slow absorption of the poison by the body and parallel rapid elimination of the poison. According to the author, the properties of absorption of the ureter play a part in the pathogenesis of infections of the urinary tract.

Rivista di Patologia e Clin. d. Tubercolosi, Bologna

12: 1-72 (Jan. 31) 1938

Researches on Morphology of Bone Marrow Taken by Puncture of Sternum in Tuberculosis. G. Lanza.—p. 1.
Tuberculosis of Hilus of Lung and Exudative Pleurisy. M. Accorimboni.—p. 23.
Microscopic and Bacterioscopic Study of Early Reactions of Spleen in Course of Experimental Tuberculous Meningitis. E. Zamboni.—p. 31.
Unilateral Predisposition to Visceral Diseases and Thoracic and Abdominal Pathologic Correspondences and Alternations. A. Campani.—p. 38.
*Elimination of Vitamin C in Tuberculosis. A. Nicita.—p. 41.
Therapeutic Action of Sodium Benzoate by Intravenous Route in Pulmonary Tuberculosis. S. Bertaccini.—p. 50.

Elimination of Vitamin C in Tuberculosis.—Nicita found that the elimination of vitamin C through the urine is diminished in patients who are suffering from pulmonary tuberculosis. The diminution is proportional to the seriousness of the general and pulmonary conditions of the patients. The consumption of vitamin C by the body is increased, owing to the presence of chronic tuberculous toxemia. The author points out the advisability of administering liberal amounts of vitamin C to patients who are suffering from pulmonary tuberculosis.

Archivos Arg. de Enf. del Ap. Digest. Buenos Aires

13: 145-241 (Dec.-Jan.) 1937-1938

Causes of Noncancerous Mechanical Jaundice: Importance of Operatory Cholangiography. P. L. Mirizzi.—p. 145.
Localization of Paracoccidioidal Granuloma in Stomach, Intestine and Pancreas. J. W. Tobías and F. L. Niño.—p. 163.
Perforated Cholecystitis: Anatomoclinic Varieties. J. A. Caeiro.—p. 176.
*Relations Between Coagulation of Blood and Jaundice. F. M. Bustos.—p. 187.
Juxtapyloric Ulcer: Pylorectomy; Painful Complications for Eighteen Years; Recovery of Patient by Reoperation; Case. P. Priani and O. Da Rin.—p. 196.
*True Clinical Significance of Rovsing's Sign. F. M. Bustos and C. J. Lebron.—p. 206.

Coagulation of Blood and Jaundice.—Bustos states that patients who are suffering from jaundice show also a tendency to hemorrhages. The general opinion that the hemorrhagic disturbance is caused by the impregnation of the tissues by biliary substances is erroneous. The author made observations on several patients in whom a surgical intervention on the biliary tract had been performed. Some patients in the group had jaundice and others had not. The author found that drainage of the bile after cholecystostomy or choledocotomy induces a retardation of the coagulation time of the blood which is proportional to the amount of bile eliminated. The retardation is sometimes a half hour or more and is not related to the presence or absence of jaundice. If the eliminated bile is reintroduced in the stomach or duodenum of the patients by means of a duodenal sound, the coagulation time of the blood diminishes. The author emphasizes the fact that the cause of the hemorrhagic tendencies in the course of jaundice depends on the failure of bile to reach the intestine, which results in insufficient absorption of fats by the intestine with consequent diminution of the supply of vitamins to the body and disturbances of the calcium metabolism. It is not, as yet, ascertained which of the phenomena mentioned are caused by the absence of bile salts in the intestine and which of them are caused by that of bile pigments.

Significance of Rovsing's Sign.—Bustos and Lebron state that Rovsing's sign is of no value in the diagnosis of appendicitis. Their opinion is based on a review of the literature and cases from their own practice. The authors conclude that the sign is often missing in cases of appendicitis and may be present in intestinal diseases of patients who had an appendectomy. Two cases of the latter instance are reported in detail by the authors.

Prensa Médica Argentina, Buenos Aires

25: 271-320 (Feb. 9) 1938

Paraffin Filling and Thoracoplasty. A. A. Raimondi, M. Albertal, M. M. Brea and J. A. Taiana.—p. 271.
Auriculoventricular Dissociation by Interference in Diphtheria: Pathogenic Study. A. Rissotto, I. Natin and Cornelia Da Rin.—p. 274.
*Ucko's Reaction in Liver Diseases. D. Boccia and J. Gamalero.—p. 281.
Therapeutic Value of Different Treatments of Erysipelas in One Hundred Cases. C. A. Videla, A. Squassi and C. Fisch.—p. 284.
Paracoccidioidal Granuloma: Case. J. W. Tobías and F. L. Niño.—p. 286.
Gonadotropic Substance in Pregnancy. A. González Collazo and E. O. Columbo.—p. 301.

Ucko's Reaction in Diseases of Liver.—Boccia and Gamalero state that the Takata-Ara reaction for liver functions is based on alterations of the proteins in the blood serum. The technic is as follows: Into four clean, small test tubes, each containing 0.2 cc. of the serum, are measured 0.1, 0.15, 0.2 and 0.25 cc. of a 0.36 per cent solution of anhydrous sodium carbonate. After shaking, the same quantities of a 0.5 per cent solution of mercury bichloride are added. The tubes are shaken again and allowed to settle for an hour and a half. Four different types of reaction can be observed: 1. A negative reaction, which is shown by the absence of precipitation in all four tubes or at least in three tubes, which remain translucent or slightly turbid. 2. Reaction 1 (+), the so-called weakly positive reaction, which is shown by the presence of slight precipitation in the first three tubes. 3. Reaction 2 (++), the positive reaction, with precipitation in all four tubes. 4. Reaction 3 (+++), the intensely positive reaction, in which a thick precipitate forms in all four tubes immediately after addition of the reagents. The authors made the test on twenty-seven patients who had diseases of the liver and in twenty-five who had diseases other than those of the liver. They found that the test gives intensely positive results in ascites of atrophic cirrhosis, positive results in some cases of cancer, regardless of the location of the disease, and negative or slightly positive results in stasis of the liver and in the majority of cases of diseases other than those of the liver. The reaction of the third type shows in all cases of serious liver involvement and does not take place in diseases other than those of the liver. The authors conclude that the test is of value for diagnosis of liver insufficiency, especially if it is performed in association with other tests. In addition to the advantage of an easy technic, the gradation of the results of Ucko's modified reaction offers the possibility of evaluating with exactness the intensity of insufficiency of the liver.

Archiv für Kinderheilkunde, Stuttgart

113: 1-64 (Jan. 21) 1938

*Cure of Rickets by Single Large Intramuscular Dose of Vitamin D. A. Nádrai.—p. 1.
*Pseudocavities in Children with Pneumonia. H. Wissler.—p. 16.
Time of Detachment of Remnant of Umbilical Cord in Premature Births. A. Kollmann.—p. 24.
Pneumothorax Following Aspiration of Foreign Body (Orange Seed). S. Kaludjerski.—p. 31.
Psyche of Nursling and Small Child. H. Koeppe.—p. 34.
Relations Between Vitamins, Hormones and Ferments. W. Dirscherl.—p. 39.

Rickets and Vitamin D.—Nádrai points out that Harnapp recommended the intramuscular injection of a single large dose of vitamin D, namely, between 12 and 15 mg., for the treatment of rickets. After reviewing the literature on the parenteral administration of vitamin D, the author describes his own experiences with the administration of the single large dose. His observations were made in thirty cases. His object was to determine the smallest dose which, in intramuscular injection, will cure rickets. He used the different types of vitamin preparations that are available on the Hungarian market and found that the freshly opened preparations are well tolerated if administered intramuscularly. The oil is absorbed within a few days. In some moderately severe cases he administered 10 cc.; that

is, the equivalent of 3 mg. of vitamin D_2 (150,000 international units), while in other cases he administered as much as from 15 to 20 cc. (4.5 to 6 mg.). He found that 10 cc., or 3 mg., was generally adequate for the cure of mild and moderately severe cases and that from 15 to 20 cc. was required for the more severe cases. In extremely severe cases and in those complicated by serious infections, such as pneumonia or influenza, the single large dose proved ineffective, probably because the organism is incapable of adequate storage of the vitamin. In such cases, which have to remain under medical control anyway, it is better to repeat the intramuscular injection after several weeks rather than to increase it. The author concludes that the administration of a single large dose of vitamin D is especially suited for prophylactic therapy.

Pseudocavitation in Children with Pneumonia.—Wissler emphasizes that not every round area of lesser density in thoracic roentgenograms corresponds to an intrapulmonary cavity. His investigations on spontaneous pneumothorax, in which pseudocavitation is quite frequent, induced him to study this problem. He defines a pseudocavity as the roundish, sharply defined area of lesser density in shadowy portions of the lung, which, in view of the clinical picture, cannot be the result of destructive processes of the lung. He does not include those phantom formations which are the result of faulty exposure and those fine annular shadows which remain after certain pleural disorders. His observations were made on cases of pneumonia. He detected the pseudocavities in children of all ages, the youngest being 10 months and the oldest 13 years of age. They appear during or after defervescence and accompany the breakup of the infiltrate. They disappear rather rapidly, without leaving traces. Rather meager anatomic observations seem to indicate that the pseudocavities are caused by a circumscribed emphysema. If their pneumonic nature has been established, they have to be differentiated from pulmonary abscess and encapsulated pneumothorax. The decisive factors are the clinical aspects and the course of development.

Klinische Wochenschrift, Berlin

17: 41-72 (Jan. 8) 1938. Partial Index

Electrocardiogram in Disturbances of Ovarian Activity. D. Scherf.—p. 44.
Question of Regulation of Blood Sugar. G. Schlomka and H. Frentzen.—p. 48.
Diacapillary Stasis Hypertension. K. E. Rothschuh.—p. 51.
*Disturbance in Secretion of Gastric Juice During Inflammatory Skin Diseases and in Chronic Administration of Histamine. F. Voss.—p. 54.
*New Medium for Mycologic Cultures. A. M. Memmesheimer.—p. 56.
Autonomic Innervation of Bone Marrow. K. Morikawa.—p. 57.

Disturbance of Gastric Function During Skin Diseases.—Voss says that histamine, which is present in body tissues particularly in the skin and which is produced in increased quantities during inflammatory processes, exerts an intensive action on the gastric secretion. Since some cutaneous disorders are accompanied by a disturbance in the gastric secretion, he and H. Voss examined the gastric juice of 200 patients with inflammatory skin diseases. They found practically a parallelism between the acidity of the stomach and the degree of inflammation and of the extension of the skin disease. The more acute and extensive the inflammation, the higher were the values of gastric acidity. It was assumed that the hyperacidity was the result of a liberation of larger amounts of histamine, or of a similarly acting substance, by the inflamed cutaneous tissues. In chronic skin diseases, however, hypoacidity or anacidity was observed. Since gastritis and ulcers can be produced by chronic injection of histamine, it may be assumed that the histamine-like substances liberated in the course of skin diseases may lead to an impairment of the gastric glands. Summarizing his observations in animal experiments, he says that the stomach of rats reacts to a single histamine injection with an increase in gastric juice and in acidity. In case of chronic administration of histamine, the quantity of free acid decreases to complete anacidity. Then it could be observed that the inhibiting action of histamine on the activity of the gastric glands is dependent more on the continued and uniform administration of histamine than on the absolute quantity of histamine; that is, the conditions were like those that were found in the inflammatory skin diseases. The authors also experimented with roentgen and quartz lamp irradiations. The object was to determine whether the gastric glands could be influenced by an experimentally produced chronic inflammation of the skin. It was found that two weekly roentgen irradiations, continued for a month, as well as quartz lamp irradiations, resulted in complete anacidity of the gastric juice.

New Medium for Mycologic Cultures.—Memmesheimer says that a shortage of peptone was an inducement to develop, in addition to the commonly used culture mediums of Sabouraud and of Gruetz, one in which peptone was not necessary. It was found that the skin of guinea pigs can be utilized in the preparation of a mycologic culture medium. The hide of a guinea pig (skin and hair) is cut to pieces and is cooked for from thirty to forty-five minutes in caustic potash solution. To from 75 to 80 Gm. of hide, 20 cc. of a 30 per cent solution of caustic potash and 75 cc. of water are added. The cooking with the caustic potash solution dissolves hair and epithelium, and the rest consists of connective tissue. The material is filtered through muslin and neutralized with hydrochloric acid. While this is done, hydrogen sulfide escapes. Then follows filtration through filter paper or cotton. To prepare the culture medium, the filtrate is diluted with water to make 1,000 cc. Then 40 Gm. of maltose and 18 Gm. of agar are added. This culture medium corresponds to the "milieu d'épreuve" (test medium) of Sabouraud and Gruetz (medium I). However, the extract of 75 or 80 Gm. of guinea pig hide, following neutralization and filtration, may be diluted with water to make 500 cc. and then combined with 9 Gm. of agar. This medium corresponds to the "milieu de conservation" (medium of preservation) of Sabouraud and Gruetz (medium II). If the extract is not to be used at once, it may be concentrated, dried and pulverized. After describing how culture mediums are prepared from this powder, the author discusses his experiences with the culture mediums. Materials from forty patients with a suspected mycosis were tested simultaneously on the culture mediums of Sabouraud, Gruetz and the described medium I. In sixteen of these patients the cultures yielded epidermophyton (usually Kaufmann-Wolf), but whereas the described medium showed this fungus in fifteen cases, the other two mediums showed it in only ten cases. Material of eight of the fungus-positive cases was tested also on the maltose-free medium II. This medium likewise yielded the fungus. The new medium proved valuable also in studies on the dissemination of epidermophytosis. The author says that growth was detectable sooner on the new medium than on the medium of Gruetz. Microsporon audouini, Microsporon filineum, Achorion quinckeanum, Trichophyton gypseum, Trichophyton rosaceum and Epidermophyton rubrum likewise showed typical growth and color formation on the new medium I. On the new medium II (free from maltose) growth and color formation were less profuse.

Münchener medizinische Wochenschrift, Munich

85: 81-120 (Jan. 21) 1938. Partial Index

Disturbances of Sleep. L. R. Müller.—p. 81.
Etiology of Epidemic Influenza. P. Schmidt and A. Kairies.—p. 86.
*Beriberi in Germany. Bröder and Engel.—p. 88.
*Temporary Pulmonary Infiltrates as Hyperergic Tissue Reactions. H. J. Busche.—p. 90.
Modification of Crystallization Picture of Copper Chloride by Tuberculous Material. E. Peiffer.—p. 92.
High Incidence of Hereditary Deafness in Family with Huntington's Chorea. G. Kloos.—p. 94.
When to Use Water Soluble and When to Use Oil Soluble Preparations in Parenteral Quinine Therapy. E. F. Rissmann.—p. 96.

Beriberi in Germany.—Bröder and Engel say that completely developed avitaminoses are comparatively rare in Germany. If avitaminoses do develop, the prolonged adherence to an extremely restricted diet plays a part and the carbohydrate portion is especially important. As early as 1884 Takaki of Japan pointed out that there seems to be a malproportion between proteins and carbohydrates in the development of beriberi. In recent years Abderhalden and Wertheimer have discovered relations between vitamin B_1 and the carbohydrate metabolism. After citing observations from the literature in which one-sided diets consisting chiefly of carbohydrates

led to the development of avitaminoses with polyneuritic symptoms, the author reports a case of his own observation. It concerned a girl, aged 14 years, who, in order to lose weight, had restricted her food intake to from two to four slices of bread with margarine and sugar. With this she drank highly sweetened cocoa prepared with water. This food she took in the evening; during the day she ate nothing, but she performed rather hard physical work in a tree nursery. Her weekly consumption of sugar was between five and six pounds. The girl continued this absurd diet for three months. Gradually her appetite decreased; she had attacks of nausea, suffered from constipation, had cardiac palpitation and felt extremely fatigued. Swelling of the ankles and legs appeared. Several weeks later, numbness developed in the legs, and walking and standing became insecure. After hospitalization the girl at first refused adequate amounts of a mixed diet, but gradually her food intake became normal and she even requested fruits and vegetables between meals. Specific therapy in the form of a daily injection of vitamin B_1 was begun immediately after admission to the hospital. In addition to this, the vitamin was given also by mouth in the form of tablets. After an initial loss in weight (elimination of the retained water) the girl gained weight. The numbness in the legs persisted for weeks and the insecurity in walking was still observable after two months. Formication and drawing pains in the legs and attacks of tachycardia occurred from time to time. The author suggests that with the absurd diet other deficiencies besides that of vitamin B_1 play a part; however, as the result of the excessive intake of sugar the deficiency in B_1 was most pronounced.

Temporary Pulmonary Infiltrates as Hyperergic Tissue Reaction.—Busche says that localized hyperergies are much more frequent than generalized allergy. He points out that recently disorders have been observed, which become manifest in a rapidly disappearing infiltration of the lungs and a high eosinophilia of the blood and which probably belong to the group of localized hyperergies. The author observed a man, aged 47, who in working near a circular saw had lost a thumb, three fingers and part of the hand. The wound healed without complications, but after about three weeks of treatment the patient suddenly acquired fever, the cause of which was at first obscure. The patient's general condition was not impaired; he complained only of a slight cough. Roentgenologic examination of the thoracic organs disclosed a massive infiltration in the region of the middle field on the left side. However, in spite of the positive roentgenologic aspects the physical examination revealed hardly any sign of disease of the lung. The small amount of yellow sputum was found to contain some eosinophilic cells and a mixed bacteriologic flora, but never tubercle bacilli. Examination of the blood disclosed a mild hypochromic anemia. The total number of leukocytes was 10,300. The differential blood count revealed an enormous eosinophilia of 29 per cent, and the sedimentation speed of the blood was greatly increased. Intravenous and oral administration of calcium was followed on the second day by disappearance of the fever, and the roentgenologic control revealed that, aside from a slight intensification in the vascular outlines, the pulmonary infiltrate had disappeared. Further blood control showed that the eosinophilia increased still more and reached a total of 38 per cent. Several successive roentgenologic examinations of the lung gave completely negative results, as did also the sputum tests for tubercle bacilli. The sedimentation speed of the blood became normal again, but there still existed an eosinophilia of 7 per cent. The peculiar course of the disease together with the severe eosinophilia suggested an allergic reaction, and cutaneous tests were made to determine the offending allergen. However, all such tests were negative. The author cites another case in which a temporary pulmonary infiltrate concurred with an increase in eosinophils. He thinks that this syndrome might be more frequent than was assumed and cites similar observations by Löffler. Moreover, Engel in Japan observed cases of so-called privet cough during the months of May and June. This disorder, which is considered as an allergic reaction to pollens, is likewise accompanied by temporary pulmonary infiltrations. The author says that Löffler regarded the process as a benign tuberculous one and that Swiss authors observed pulmonary infiltrates of short duration in patients with tuberculosis. However, he emphasizes that in the majority of cases a relationship to tuberculosis has not been proved and that more observations will be necessary to arrive at a complete causal explanation.

85: 121-160 (Jan. 28) 1938. Partial Index

Occupation and Cancer. M. Staemmler.—p. 121.
Gas Gangrene Infection After Injection. G. Jungmichel, M. Kirschner and H. Habs.—p. 129.
Keratitis Parenchymatosa. F. Schieck.—p. 132.
Preliminary and After Treatment in Gastric Operations. O. Kunze.—p. 136.
Familial Occurrence of Leukemia. P. Gottlebe.—p. 140.
*Method of Staining Erythrocytes in Urinary Sediment. A. W. Endtz.—p. 141.

Staining Erythrocytes in Urinary Sediment.—Endtz says that, if there are only a few erythrocytes in the urinary sediment, errors may be caused by bodies such as yeast cells, algae, lymphocytes and other formed elements. The author succeeded in finding a method which will avoid such errors. He prepares two stock solutions: the first consists of 1 part of benzidine in 100 parts of diluted alcohol; the second consists of 20 parts of a 6 per cent solution of acetic acid in 100 parts of distilled water. The reagent that is used for staining the erythrocytes is composed of 1 cc. of the first solution, 2 cc. of the second solution, five drops of a 3 per cent solution of hydrogen peroxide and 9 cc. of distilled water. Following centrifugation of the urine, the fluid is carefully poured off so that as little as possible remains in the sediment. Then a drop of the reagent is put into the centrifuge tube and, by slight tapping, is mixed with the sediment. If a urine contains much sediment, it is advisable to place a drop of it on a slide and then add a drop of the reagent. The two drops are mixed by drawing the cover glass in the oblique position back and forth over the slide. Inspection of the stained preparation reveals that all formed elements of the blood have turned blue, whereas yeast cells and all other elements not belonging to the blood remain unstained. The erythrocytes show a uniform blue with only a few isolated granules. The leukocytes show a blue nuclear stain; the protoplasm contains many blue granules. These granules may be so numerous and their coloring so intense that the nuclear stain may disappear among them. The large lymphocytes can be recognized by their round nuclei and by their protoplasm with many granules. The small lymphocytes are differentiable from the erythrocytes by their large number of granules. If a more distinct differentiation of the erythrocytes and leukocytes and of the various types of leukocytes is desired, it is advisable to use a reagent with a higher acetic acid content. The author recommends the following reagent: 0.5 cc. of concentrated solution of benzidine (as indicated), three drops of a 3 per cent solution of hydrogen peroxide, five drops of distilled water and 5.5 cc. of a 1 per cent solution of acetic acid. This reagent is best for the differentiation of the different types of blood corpuscles, but, if only erythrocytes are looked for in the sediment, the first mixture is the best.

Zeitschrift für Kinderheilkunde, Berlin

59: 249-430 (Dec. 24) 1937. Partial Index

*Question of Action of Vitamin A in Treatment of Rickets. H. Burchard.—p. 249.
Changes of Carbohydrate Metabolism After Fat Intake. E. Höllischer.—p. 257.
*Clinical Value of Wheal Test in Nutritional Disturbances of Nurslings. Liselotte Schauer.—p. 262.
Sedimentation Speed of Erythrocytes in Abdominal Tuberculosis in Children. E. Sommerfeld.—p. 303.
Observations on Twins with Niemann-Pick's Disease. E. Freudenberg.—p. 313.
*Clinical Experiences with Vitamin D_3. S. Folberth.—p. 329.
Mode of Action of Apple Diet. E. A. Voss.—p. 391.

Action of Vitamin A in Rickets.—Burchard investigated whether it is advisable to treat rickets simultaneously with vitamins A and D. Since it was demonstrated that cod liver oil is of superior value in the treatment of rickets, it was of interest to learn whether vitamin A is concerned in the antirachitic action of cod liver oil. The author points out that erroneous conclusions have been drawn in other investigations on this problem because it was overlooked that the preparations of vitamin A that were used contained also vitamin D. The

author treated one group of rachitic children with a preparation of vitamin A which contained also vitamin D_3, and a second group of children with vitamin D_3 only. In the latter group he used the same preparation, but the vitamin A contained in it had been destroyed. He found that the preparation of vitamin A which contains vitamin D_3 is an effective remedy for rickets, whether it is given unaltered or after destruction of the vitamin A content. The preparation in which the vitamin A had been destroyed produced the same increase in the anorganic phosphorus of the serum, but a greater increase than did the unchanged preparation in the roentgenologically demonstrable calcium deposits. The quantities of vitamin D_3 required for the cure of rickets were below the quantities of vitamin D_2; that is, of the form of vitamin D which is contained in irradiated ergosterol.

Wheal Test in Nutritional Disturbances of Nurslings.—Schauer directs attention to the McClure-Aldrich wheal test and describes her experiences with this test in nurslings. First she reports experiences with the test in forty-two healthy and eutrophic nurslings and then in fifty nurslings with nutritional disturbances. She emphasizes that the wheal test should be made always under the same conditions, preferably while the children are fasting, and the site of injection and the technic should be always the same. In eutrophic and healthy nurslings the wheal time (time required for its disappearance) is determined by the age of the children; that is, with increasing age the resorption time was retarded. Nurslings with nutritional disturbances but without clinical signs of loss of water had a prolongation of the wheal time. The wheal time was still longer in the nutritional disturbances that were accompanied by an acute or chronic exsiccosis, and the slowest disappearance of the wheal was observed in cases in which exsiccosis and atrophy concurred or when an intoxication existed. The author stresses that a single determination of the wheal time does not permit definite evaluations but that repetition of the test at intervals of several days provides a good insight into the water economy of nurslings with nutritional disturbances. In premature infants the wheal time is shorter than in full-term infants, even in later months; that is, the standard age values do not apply to prematurely born infants. A shorter than normal wheal time was detected also in nurslings with tetany, icterus and eczema, in a case of extensive edema after burns, in two cases of myxedema and in one case of diabetes insipidus. The author reaches the conclusion that, if the wheal test is employed with the necessary criticism and care, if an exact technic is used and evaluations are not based on single determinations, and if attention is given to secondary factors that may influence the disappearance of the wheal, the method is helpful in the evaluation of nutritional disturbances in nurslings.

Clinical Experiences with Vitamin D_3.—Folberth demonstrates that the crystallized vitamin D_3 which is obtained from irradiated 7-dehydro-cholesterol is identical with the antirachitic substance of cod liver oil. It is not identical with the vitamin D_2 that is produced by the irradiation of ergosterol. The author cured various forms of rickets with vitamin D_3 and found that it was well tolerated. However, he has not yet demonstrated whether the antirachitic action of vitamin D_3 is definitely superior to that of vitamin D_2.

Wiener klinische Wochenschrift, Vienna

51: 161-192 (Feb. 11) 1938. Partial Index

Rare Forms of Syphilis of Nervous System. D. Paulian.—p. 161.
Physicotherapy. P. Groag.—p. 165.
Differential Diagnosis and Therapy of Pregnancy Anemias. V. Föderl.—p. 168.
*Short Wave Treatment of Endocrine System of Diencephalon and Mesencephalon. J. Samuels.—p. 170.
Changes in Cancer Mortality in Vienna. S. Peller.—p. 176.
*Does Excitement of Examination Influence the White Blood Picture? H. Kellner.—p. 178.
Treatment of Various Forms of Retention of Urine. P. Blatt.—p. 180.

Short Wave Diathermy in Endocrine Disorders.—Samuels points out that the use of organ preparations during endocrine disturbances is a substitution therapy. Although this form of treatment may have a prompt effect it is usually not lasting, for whereas the deficiency of one gland is compensated the related glands and the hypophysis are made inactive by the substitution therapy. The author shows that it is much better to reestablish the equilibrium in the disordered endocrine system by stimulation or inhibition. He says that Dausset tried to accomplish this by general short wave therapy and that since Dausset's death he has continued to study the use of short wave therapy for this purpose. He shows that before short wave therapy can be begun the following points have to be clarified: 1. What gland is diseased? 2. What is the condition of the hypophysis and its surroundings? 3. Is the disturbance due to hypofunction or to hyperfunction? 4. Is the existing disorder reparable or irreparable? The author clarifies these factors by determining the reduction time of the oxyhemoglobin, as index of the hormone content of the blood, before and after stimulation of the different endocrine glands. To accomplish this he uses the cycloscope, the construction and operation of which he described in the *Journal of Obstetrics and Gynaecology of the British Empire* (**44**:1036 [Dec.] 1937; abstr. THE JOURNAL, Feb. 26, 1938, p. 696). The figure, which is determined before the stimulation of the glands, is the initial number. If the function of the endocrine glands is normal, stimulation in the condenser field causes practically no changes. However, in case of dysfunction of an endocrine gland, the reduction figure that is determined immediately after the stimulation shows a greater or lesser deviation from the normal figure. In women the figures are usually determined in the following order: initial number, numbers resulting after stimulation of the thyroid, the hypophysis, the ovaries and the breasts and, if necessary, the numbers resulting after stimulation of the adrenals and the pancreas. The different figures are entered in a diagram and the resulting curve is designated as the endocrine electrodiagram. This diagram is valuable not only for the diagnosis but also for therapy. The author says that hypofunctional disturbances are cured by stimulating first the complementary gland and then the actually dysfunctioning gland, either by local or by general short wave therapy. In disturbances due to hyperfunction, he resorts first to indirect inhibition by applying short wave treatment to the antagonistic gland and after that he treats the hyperfunctioning gland in the condenser field. He was able to demonstrate that in many endocrine disturbances the primary cause of the disorder is in the mesencephalon, the diencephalon and the hypophysis. If short wave therapy is applied to the hypophysis, not only this organ but the entire mesencephalon is influenced and thus the various centers and tracts. The author points out further that there are numerous disorders in which a hypophysial involvement has not been suspected heretofore; he mentions migraine, bronchial asthma, diabetes mellitus and gastroduodenal ulcers. He was able to demonstrate, for instance, that following short wave treatment of the hypophysis the sugar content of the blood of patients with diabetes mellitus decreased rapidly.

Excitement of Examination and the Leukocyte Count.—Kellner directs attention to Farris's investigations of behavior of the white blood picture of students before, during and after examination and before and after football games. Farris found that the lymphocytes were greatly increased during the examination and before the game and believed that this was the result of the excitement caused by the examination or the game. In view of the fact that even extreme mental exertion causes only extremely slight metabolic changes and almost no changes in the white blood picture, Kellner decided to verify the observations made by Farris. Reasoning that the excitement is even greater before the examination than during it, the author examined the white blood picture of forty-five students on the day before the examination and a few minutes before. Because these tests did not corroborate the observations made by Farris, additional tests were made on twenty students. In the latter group, tests were made before and during the examination. In these cases a slight decrease (3 per cent) was observed. From these observations the author concludes that the excitement of the examination does not cause any essential morphologic changes in the white blood picture. In trying to explain the discrepancies between his own observations and those of Farris, he points out that mistakes in counting or the absence of excitement in his subjects can be ruled out, because of the rather large number examined and because some of the students, who clearly showed signs of excitement, were free from lymphocytosis.

Klinicheskaya Meditsina, Moscow

15: 1177-1352 (Nos. 10-11) 1937. Partial Index

Clinical Anatomic Trends in Pathologic Anatomy in the U. S. S. R. for the Last Twenty Years. A. I. Abrikosov.—p. 1195.
Soviet Pathophysiology of the Last Twenty Years. D. E. Alpern.—p. 1203.
Clinical Aspects of Internal Diseases of the Last Twenty Years. M. M. Gubergrits.—p. 1211.
*Clinical Evaluation of Mechanism of Blood Transfusion. Kh. Kh. Vlados.—p. 1268.
Biologic Characteristics of Arterial Blood. B. Lidskiy.—p. 1288.
*Clinical and Anatomic Similarities of Amyloid-Lipoid Nephrosis. M. I. Frankshteyn.—p. 1323.

Mechanism of Blood Transfusion.—According to Vlados, there are a number of components other than the erythrocytes the importance of which in the blood transfusion is but little understood. Among them may be mentioned the hormones, the ferments and the electrolytes. The distribution of the albuminous components of the blood plasma, the degree of their assimilation and of breaking down both in the transfused blood and in that of the recipient have not been clarified. The author states that the results obtained with repeated blood transfusions in the treatment of anemia at the clinical division of the Moscow Institute of Hematology suggest that the dose, as well as the interval between the transfusions, has an important part. The effect seems to follow the law of Arndt-Schultze; namely, that weak stimuli increase physiologic activities while strong stimuli abolish them. In anemias resulting from failing hematopoietic function of the organism, the amount of blood transfused and the intervals between the repeated transfusions may result either in stimulation of hematopoiesis or in its inhibition. In order to avoid the negative phase, it is necessary to allow not less than from three to four days between the transfusions. Doses of from 200 to 300 cc. are quite sufficient. The lower the color index of the blood, the more striking is the effect of the transfusion. The anhematopoietic and hypoplastic forms of anemia require numerous transfusions. The hemoglobin in these types, even after repeated transfusions, lags behind the number of the erythrocytes. To obtain the maximum therapeutic effect, the author advises, in addition to repeated transfusions, administration of large doses of iron with, in some cases, liver therapy. Blood transfusion is not indicated in the first days of an acute infectious disease. Indications for transfusion may appear in the subacute and the chronic state. Acute articular rheumatism and scarlet fever constitute the only exceptions. In these, transfusions are indicated in the first few days.

Similarities of Amyloid-Lipoid Nephrosis.—Frankshteyn reports twenty-three personally observed cases of generalized amyloidosis and an analysis of similar cases from the postmortem material of two large general hospitals in Moscow. This material embraces 285 deaths from chronic diseases complicated by amyloidosis. The cause of death was pulmonary tuberculosis in 36 per cent, chronic suppuration in 42 per cent (58 per cent of these were pneumosclerosis with bronchiectasis), visceral syphilis in 8.5 per cent, chronic colitis in 3 per cent, neoplasm in 3 per cent, recurring rheumatic endocarditis in 2 per cent, lymphogranulomatosis in 0.4 per cent and undetermined in 5.1 per cent. The clinical and microscopic studies of this large material reveal that nontuberculous pneumosclerosis with bronchiectasis has a prominent part in the etiology of amyloidosis. Enlargement of the liver and spleen and diarrheas are not necessary clinical symptoms of general amyloidosis. Pure amyloidosis of the kidneys is seldom seen at necropsy. It is characterized, when present, by the absence of clinical manifestations. Renal amyloidosis is associated in the majority of cases with lipoid nephrosis. The processes develop independently in the presence of the same chronic infections and manifest themselves clinically as amyloid-lipoid nephrosis. The lipoid nephrotic component leads to dropsy, albuminuria and cylindruria. In a number of cases, however, the amyloid-lipoid nephrosis, despite the progression of the lesion, may run without edema but with albuminuria. Amyloidosis of the glomerular arterioles results in a secondary contraction of the glomeruli with symptoms of renal insufficiency. The rate of the development of amyloidosis and the destruction of the glomeruli vary. In the majority of the cases azotemia develops in the state of the large white kidney, resulting in part from the overloading of the organism with the broken-down albuminous bodies. The clinical course of the amyloid-lipoid nephrosis presents, as a rule, three stages: adequate renal function, lowered function and insufficient renal function. The lethal event for the majority of the cases takes place in the second stage and depends principally on the progression of the basic chronic infection. Renal amyloidosis affects the arterioles of the parenchymatous organs and as a local process does not lead to hypertension and to hypertrophy of the left ventricle of the heart or to pathologic alterations in the fundus of the eye. The cardiovascular syndrome is present only when the amyloid-lipoid nephrosis is associated with arteriosclerosis or with nephritis. Microscopic hematuria was present in 40.3 per cent of all the cases of amyloid-lipoid nephrosis and in the majority of the cases was caused by the passage of the erythrocytes through the unruptured walls of the vessels.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

82: 257-356 (Jan. 15) 1938

Herpes Zoster with Facialis Paralysis. P. H. Kramer.—p. 258.
*Traumatic Arachnoiditis. G. G. J. Rademaker.—p. 264.
Rectoscopic and Bacteriologic Examination of Women with Gonorrhea. R. Kooij and A. C. Ruys.—p. 272.
*Plethysmometry of Nose in Diagnosis of Patency of Sigmoid Sinus and of Jugular Vein. H. A. E. Van Dishoeck.—p. 277.
Irradiation with Hertzian Waves. W. A. G. Van Everdingen.—p. 284.
*Some Infants with Low Temperatures Refuse to Nurse. J. T. Rademacher.—p. 289.

Traumatic Arachnoiditis.—Rademaker maintains that post-traumatic adhesions of the leptomeninges are more frequent than is generally recognized. This is proved by the fact that the complaints of the patients whose histories are reported in this paper were all erroneously diagnosed. Frequently the complaints are interpreted as "compensation neurosis." The author describes four cases of traumatic arachnoiditis: these patients frequently complain of headaches or pains in the neck, back or loins, and the complaints are often aggravated by physical exertion. They may appear more than a year or even several years after the trauma. Other symptoms are sensory disturbances of a radicular extension, reflex disturbances and impairment of the motility. The author shows that a correct diagnosis is possible only with the aid of a test with iodized oil. Surgical treatment produces cure or considerable improvement in some of the cases.

Plethysmometry of Nose and Patency of Sigmoid Sinus and Jugular Vein.—Van Dishoeck directs attention to the fact that, in case of obstruction of one jugular vein by means of unilateral compression of the neck, the inferior concha of the same side of the nose becomes swollen, because the venous blood coming from the endocranium causes a congestion of the pterygoid plexus. In some cases this swelling can be detected by anterior rhinoscopy, but by means of an especially constructed nasal plethysmometer the swelling can be detected in nearly all these cases. The author describes and illustrates this nasal plethysmometer. He shows that, because the swelling can be detected in nearly all cases, it can be utilized as a symptom of obstruction of the jugular vein and of the sigmoid sinus in cases of thrombosis, of pressure by brain tumor or brain abscess and of congenital absence of the sinus or jugular vein. In this case the symptom will be negative on the side of the obliteration and strongly positive on the other side.

Infants with Low Temperatures and Refusal to Nurse.—Rademacher points out that in infants who refuse to nurse a low temperature is often the cause, for the rectal temperatures of such nurslings have been found to be 36.2 C. (97.2 F.) or even lower. Warming by means of hot water bottles has been found to be effective to counteract the aversion to nursing. After citing several cases that he himself observed he reports studies on this problem, which were carried out on a larger material. On the basis of the body temperatures and the nursing record, this material is divided into four groups. To the first group belong nurslings with low temperatures who refused to nurse; to the second group belong those with low temperatures who nursed normally; to the third group belong those with normal temperatures who nursed satisfactorily, and to the fourth group belong those of normal temperature who refused to nurse. The last mentioned group included infants who were born prematurely, some who were underweight, some with mongolian idiocy and weak nurslings with low vitality.